203

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Admiral	321DX15, 16, 17, 26 (Ch. 19E1) Tel. Rec.	203-2
Airline	25BR-1542A	203-3
Arvin	6173CM (Ch. TE-331-3, -4), 6175TM, 6179TM (Ch. TE-331, -1, -2, -3, -4) Tel. Rec. Prod. Chg. Bul. 66	203-1
Capehart	CT-75, CT-77, CT-81 (CX-37 Series) Tel. Rec.	203-4
Capehart	TC-100 (Ch. C-297), TC-101 (Ch. CR-36)	203-5
Crosley	E10BE, CE, RD, WE (Ch. 10E, 10E-1)	203-6
Philco	53-T1827, -F, 53-T1853, L, 53-T2127, 53-T2266, 53-T2268, 53-T2269, 53-T2270, 53-T2271, 53-T2273C, M (Code 126) (Ch. 91 & J1) Tel. Rec. Prod. Chg. Bul. 66	203-1
Philco	53-1350, 53-1750	203-7
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Silvertone	2060, 2061 (Ch. 101.861, -1)	203-9
Silvertone	3175 (Ch. 132.044) Tel. Rec.	203-10
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Zenith	K622, F, G, W (Ch. 6K03)	203-17
Zenith	K666R (Ch. 6K02)	203-18

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 INSET 185

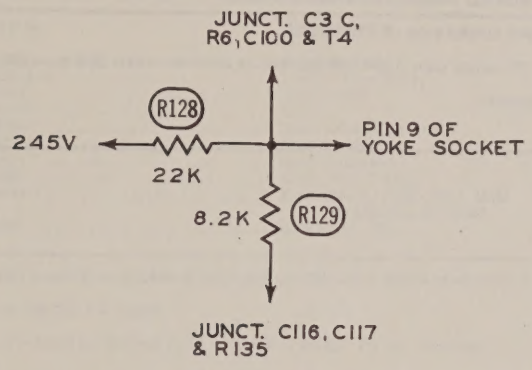
Ch. 91, J-1

Philco Models 53-T1827 and 53-T1827-F are electrically identical to the Models covered in Photofact Folder 10, Set 185.

The following corrections should be made to the schematic in Photofact Folder 10, Set 185.

R126 should be changed to 470KΩ.

The connections to R129 are reversed. The lead from the junction of R128 and R129 should go to C3C and pin 9 of the yoke socket and the low side of R129 should go to the junction of R135 and C116. The corrected connections are shown below.



Ch. 91 Runs 1 and 2.

In later production runs the following changes were made.

Production changes in Ch. 91 runs 1 and 2 are covered in Photofact Folder 10, Set 185.

Run 3

TO FACILITATE VIDEO IF ALIGNMENT

The second Video IF coil was changed from part #32-4548-28 to part # 32-4548-24. This coil is identical to the one previously used, except it has a slightly lower inductance.

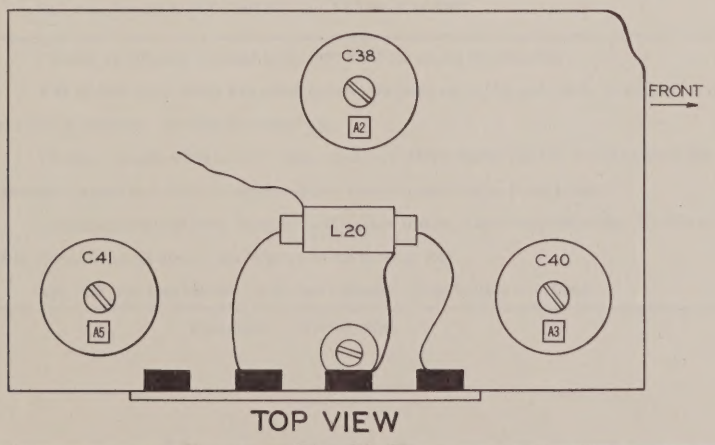
Run 3A and 4

A 12KΩ resistor was added across the secondary of L29.

Run 6

TO REDUCE IF INTERFERENCE

C37, C38, C39, C40, C41, C42, L20, L21, L22, L23 and R26 (alignment points A2, A3 and A5) were moved to a shielded sub-assembly on the top of the chassis. A drawing below shows the placement of the alignment points.



TOP VIEW

PHILCO MODELS 53-T1827, -F, 53-T1853, L, 53-T2127, 53-T2266 53-T2268, 53-T2269, 53-T2270, 53-T2271, 53-T2273C, M (Code 126)(Ch. 91, J-1)

(Continued on Reverse Side)

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Ch. J-1 Run 1 thru 5	Production changes in deflection chassis J-1 thru run 5 were covered in Photofact Folder 10, Set 185.
Run 6	TO REDUCE RINGING IN HORIZONTAL DEFLECTION COILS C118 was changed from 56MMF to 68MMF.
Run 7	TO ELIMINATE PICTURE WEAVE The black lead from the filament transformer (point W) was moved from pin 7 to pin 6 of the chassis interconnecting plug. The filament fuse wire (R133) was connected between pins 6 and 7 of the chassis interconnecting plug. Numerous other filament leads and ground points were rearranged, however the circuit remains electrically identical.
Run 8	TO INCREASE WIDTH R128 was changed from 22KΩ to 33KΩ. R126 was changed from 470KΩ to 270KΩ.
Run 9	TO IMPROVE OPERATION OF CONTROLS The height control (R6) and the vertical linearity control (R5) were both changed from 5 megohms to 2.5 megohms.

PHILCO MODELS 53-T1827, -F, 53-T1853, L, 53-T2127, 53-T226, 53-T2268, 53-T2269, 53-T2270, 53-T2271, 53-T2273C, M (Code 126) (Ch. 91, J-1)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 IN SET 181

Arvin Models 6175TM and 6179TM (Ch. TE-331-2) are covered in Photofact Folder 4, Set 181.

Ch. TE-331, -1

In earlier production of Models 6175TM and 6179TM, Ch. TE-331 or TE-331-1 were used. Ch. TE-331-1 is identical to Ch. TE-331-2 except for the following component value changes.

R72 was 68KΩ.
R95 was 470KΩ.
R96 was 15KΩ.
C97 was .022MFD.
C98 was .01MFD.

In addition to the above, chassis TE-331 used tuner part #E-25702-1. The correct tuner for Ch. TE-331-1 and up should be changed to #E-25548-1. The two tuners are identical except for shaft length.

Model 6173TM

Model 6173TM (Ch. TE-331-3, -4) has, also, been added to the Models covered in Photofact Folder 4, Set 181. A cabinet parts list for Model 6173TM is given below:

PART No.	DESCRIPTION
D40590	Retainer Rail
AD25913-5	Control Door Assy.
E25537	Safety Glass
R40450-1	Mask
D40170-1	Knob (Channel Selector)
D40171-1	Knob (Volume)
D23604	Knob (Contrast)
D23605	Knob (Fine Tuning)
C24699-3	Knob (Horiz. Hold, Vert. Hold Brightness) (3 Used)
C25627	Speaker 5" PM

Ch. TE-331-3

In later production of Model 6175TM and 6179TM and in initial production of Model 6173TM, Ch. TE-331-3 or TE-331-4 are used.

Ch. TE-331-3 is identical to Ch. TE-331-2 except, for the following:

The picture tube was changed from type 17HP4 to 17LP4.

To extend the range of the Horiz. Hold Control (R3), the control was changed from 25KΩ to 50KΩ. R99, in series with the control was changed from 91KΩ to 100KΩ.

To extend the range of the Vert. Hold Control, R86, in series with the control, was changed from 1Meg to 1.5Meg.

R87, vertical peaking resistor, was changed from 10KΩ to 12KΩ.

C91, across the vertical output transformer was changed from .033MFD to .022MFD.

To limit the current through the 5U4, low voltage rectifier, a 100Ω, 30W. resistor was added from pin 8 of V21 (5U4) to the junction of C1A and L1.

Due to the decreased voltage by the addition of the 100Ω resistor, the following changes were made in the value of components in the B plus circuits.

R52 was changed from 4700Ω to 470Ω.

R105 was changed from 300Ω, 5 W. to 50Ω, 5W.

R112 was changed from 15KΩ to 6.8KΩ.

R113 was changed to 1800Ω and R114 and R115 were omitted.

Ch. TE-331-4

Chassis TE-331-4 is identical to Ch. TE-331-3 except for the following:

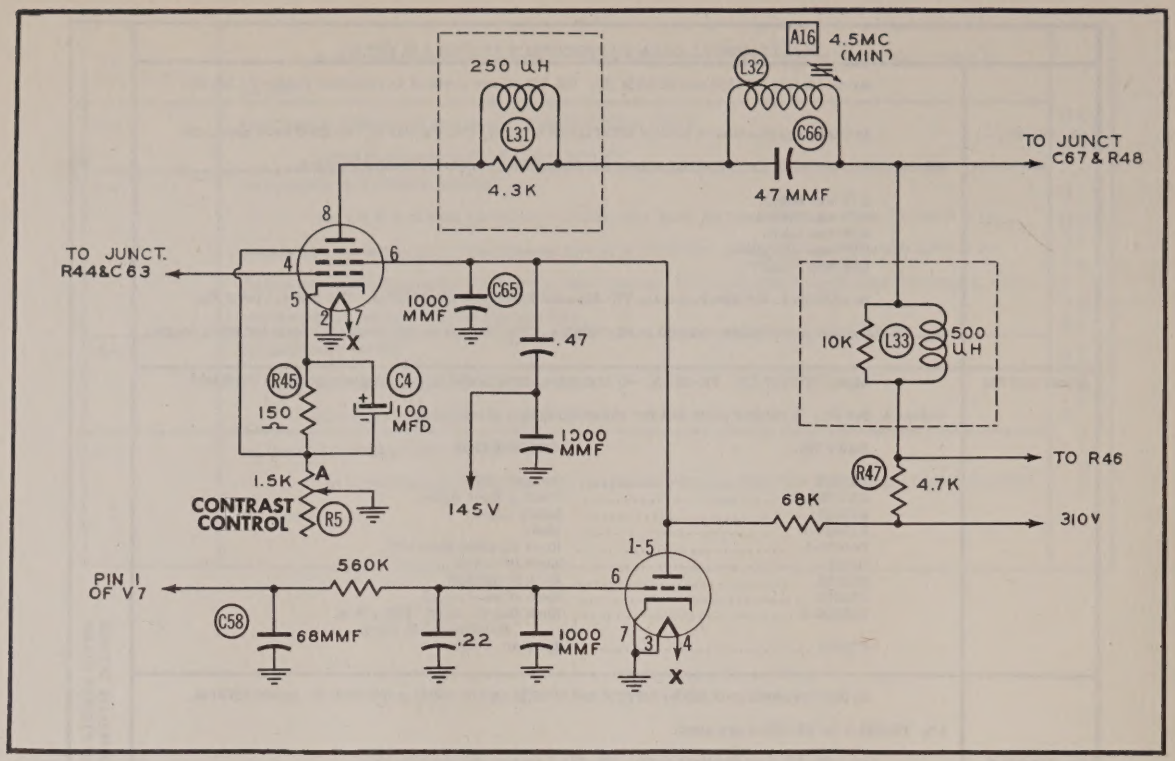
A 93 microhenries choke was added, between the plate cap of V18 and pin 9 of the Horiz. Output Transformer, to eliminate Barkhausen oscillation.

L31 was changed to 250 microhenries, wound a 4.3KΩ resistor, and L33 was changed to 500 microhenries, wound on a 10KΩ resistor, to reduce smearing and ringing in the picture.

To improve vertical noise imunity, a 6C4 noise limiter stage was added in Ch. TE-331-4. A partial schematic of the new circuit is given on the reverse side.

R70, V13 grid load resistor, was also changed from 2.2Meg to 4.7Meg.

(Continued on Reverse Side)


250 UH
L31
4.3K
A16 4.5MC (MIN)
L32
C66
47 MMF
TO JUNCT C67 & R48
TO JUNCT. R44&C63
8
6
4
5
2
7
X
1000 MMF
C65
.47
1200 MMF
R45
150
C4
100 MFD
1.5K
A
CONTRAST CONTROL
R5
145V
10K
L33
500 UH
R47
4.7K
TO R46
68K
310V
1-5
6
560K
PIN 1 OF V7
C58
68MMF
.22
1000 MMF
7
3
4
X

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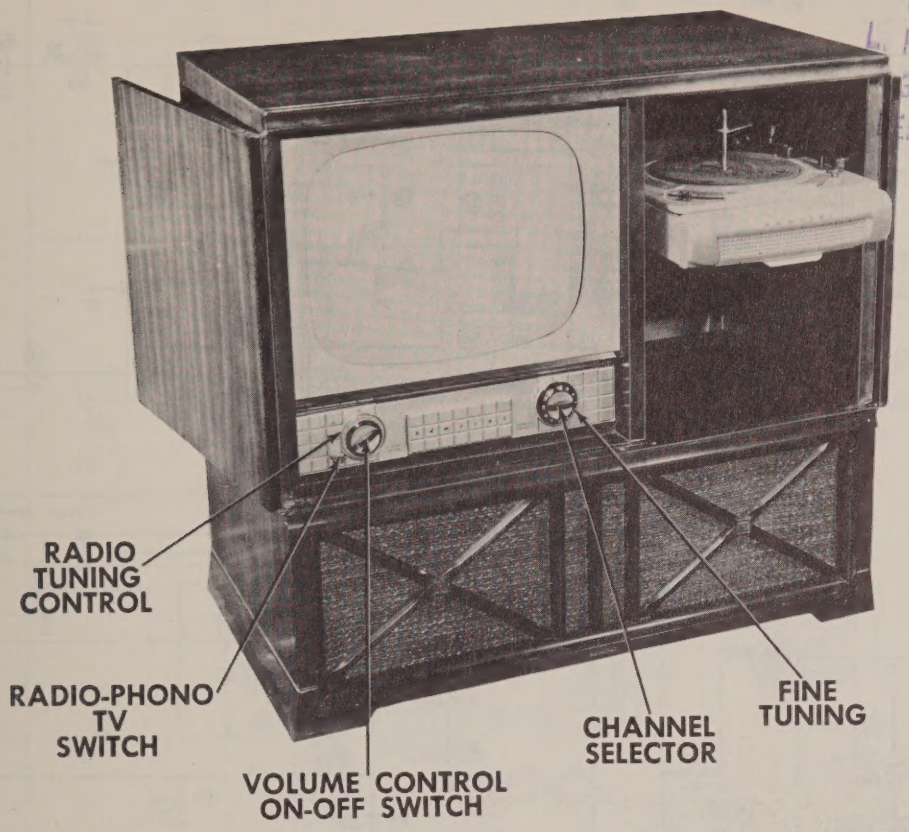

ADMIRAL MODEL V321DX16

TRADE NAME	Admiral Models 321DX15, 321DX16, 321DX17, 321DX26 (Ch. 19E1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois.
TYPE SET	TV-AM-Phono Combination Receiver
TUBES	Twenty-One
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.56 Amp @117 Volts AC
TUNING RANGE—	TV Channel 2 thru 13, Video IF 25.75MC, TV Sound IF 21.25MC (Intercarrier) 540-1620 KC,AM IF 455KC

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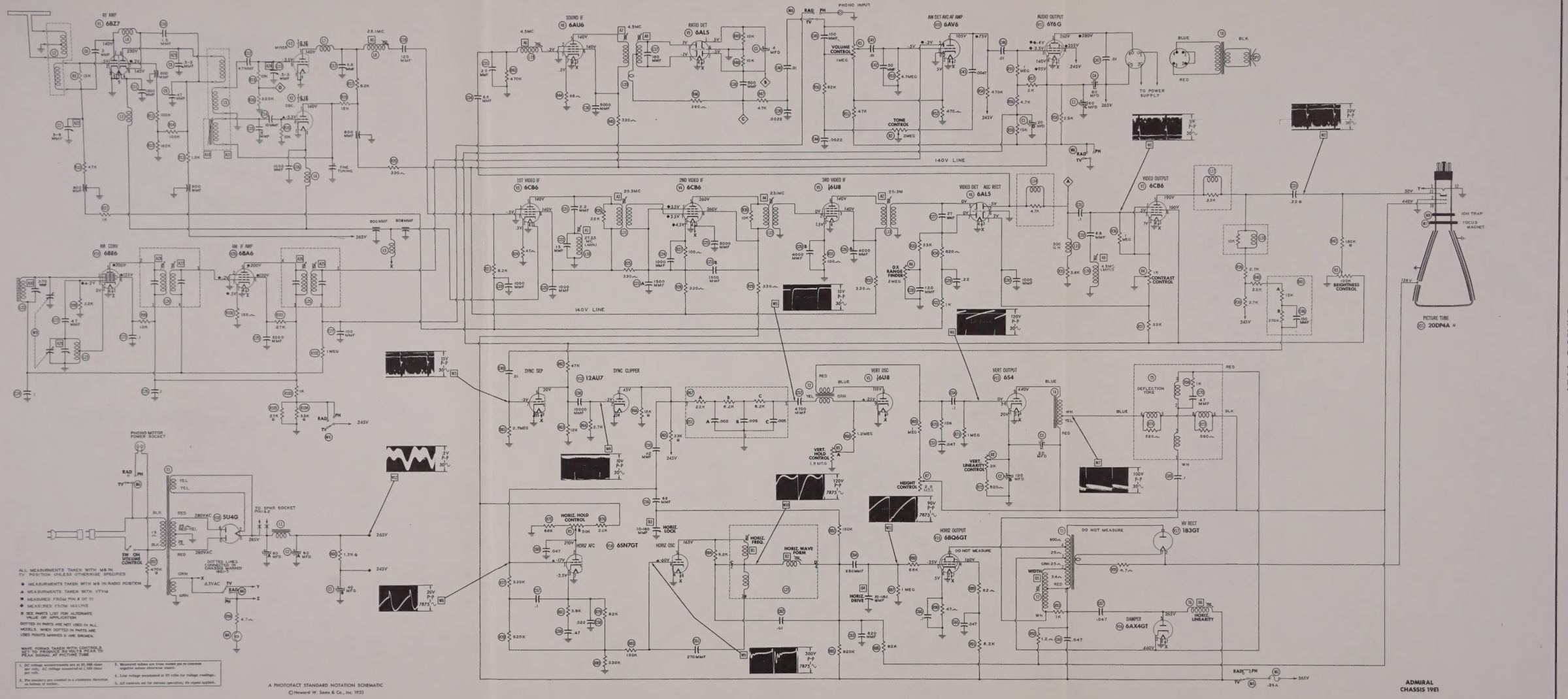
ADMIRAL
CHASSIS 19E1


ADMIRAL
CHASSIS 19E1
RF AMP
V1 6BZ7
MIXER
V2 6J6
OSC.
V3 6J6
FINE TUNING
AM CONV.
V19 6BE6
AM IF AMP.
V20 6BA6
SOUND IF
V8 6AU6
RATIO DET.
V9 6AL5
PHONO INPUT
VOLUME CONTROL
1MEG
TONE CONTROL
2MEG
AM DET-AVC-AF AMP
V10 6AV6
AUDIO OUTPUT
V11 6Y6G
TO POWER SUPPLY
BLUE
BLK
RED
1ST VIDEO IF
V3 6CB6
2ND VIDEO IF
V4 6CB6
3RD VIDEO IF
V5 6U8
VIDEO DET AGC RECT
V6 6AL5
VIDEO OUTPUT
V7 6CB6
140V LINE
CONTRAST CONTROL
BRIGHTNESS CONTROL
ION TRAP
FOCUS MAGNET
PICTURE TUBE
V21 20DP4A
SYNC SEP
SYNC CLIPPER
V12 12AU7
VERT OSC
V5 6U8
VERT. HOLD CONTROL
1.5 MEG
VERT OUTPUT
V13 6S4
HEIGHT CONTROL
2.5 MEG
VERT. LINEARITY CONTROL
3K
DEFLECTION YOKE
560
HORIZ. HOLD CONTROL
50K
HORIZ AFC
V14 6SN7GT
HORIZ OSC
HORIZ. LOCK
HORIZ. FREQ.
HORIZ. WAVE FORM
HORIZ. DRIVE
HORIZ OUTPUT
V15 6BQ6GT
DO NOT MEASURE
HV RECT
V17 1B3GT
WIDTH
DAMPER
V16 6AX4GT
HORIZ. LINEARITY
PHONO MOTOR POWER SOCKET
SW ON VOLUME CONTROL
TO SPKR SOCKET PIN 1 & 2
280VAC
V18 5U4G
6.3VAC
ALL MEASUREMENTS TAKEN WITH M/S IN TV POSITION UNLESS OTHERWISE SPECIFIED
MEASURMENTS TAKEN WITH VTVM
MEASURED FROM PIN 8 OF V1
MEASURED FROM 140 LINE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED ∂ ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE PATTERN TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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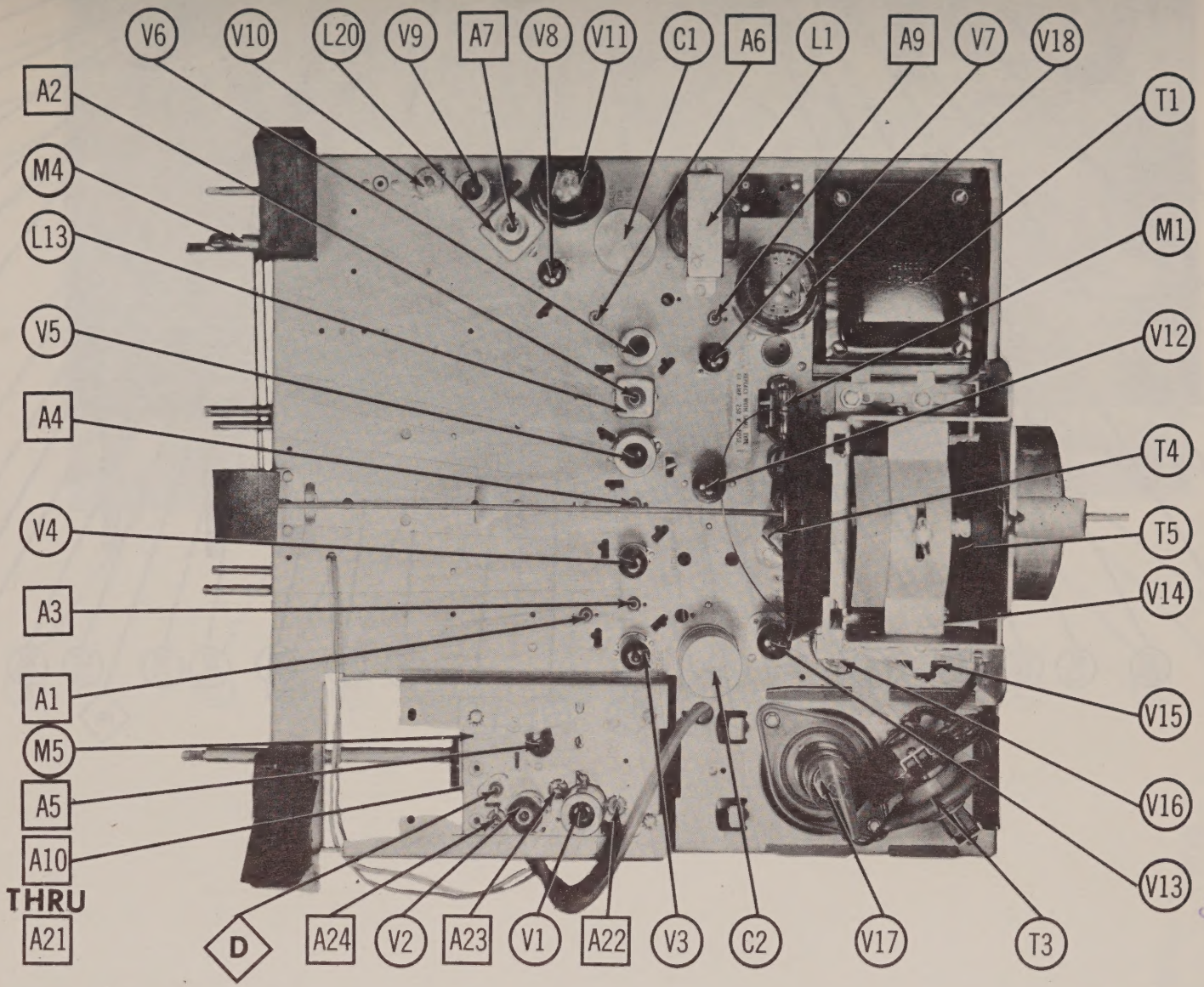
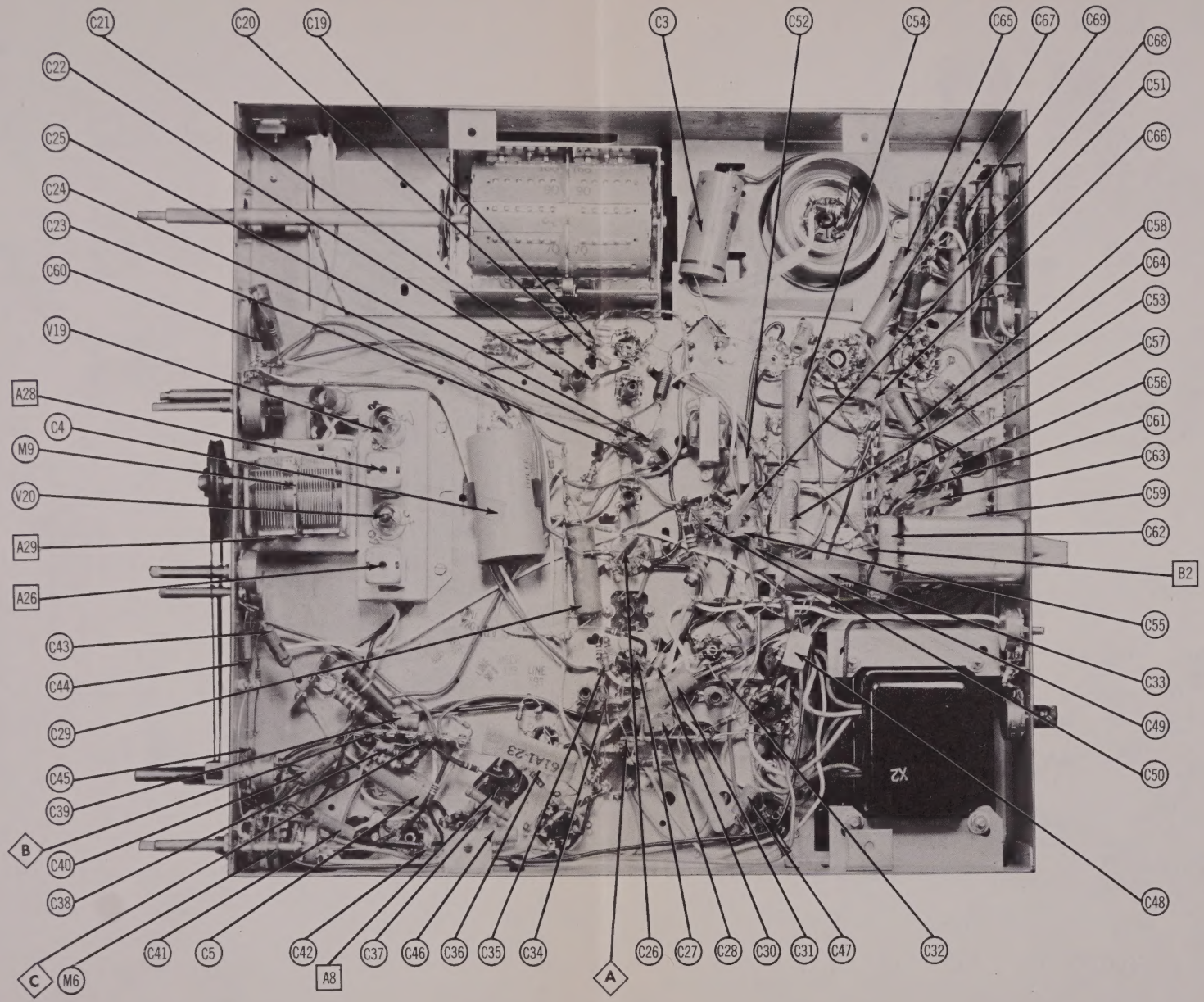
ADMIRAL
CHASSIS 19E1



CHASSIS TOP VIEW

L. F. BLANKENSHIP OF
3624 MEADE ST.
DENVER, COLORADO

L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

...SHIP
...ST.
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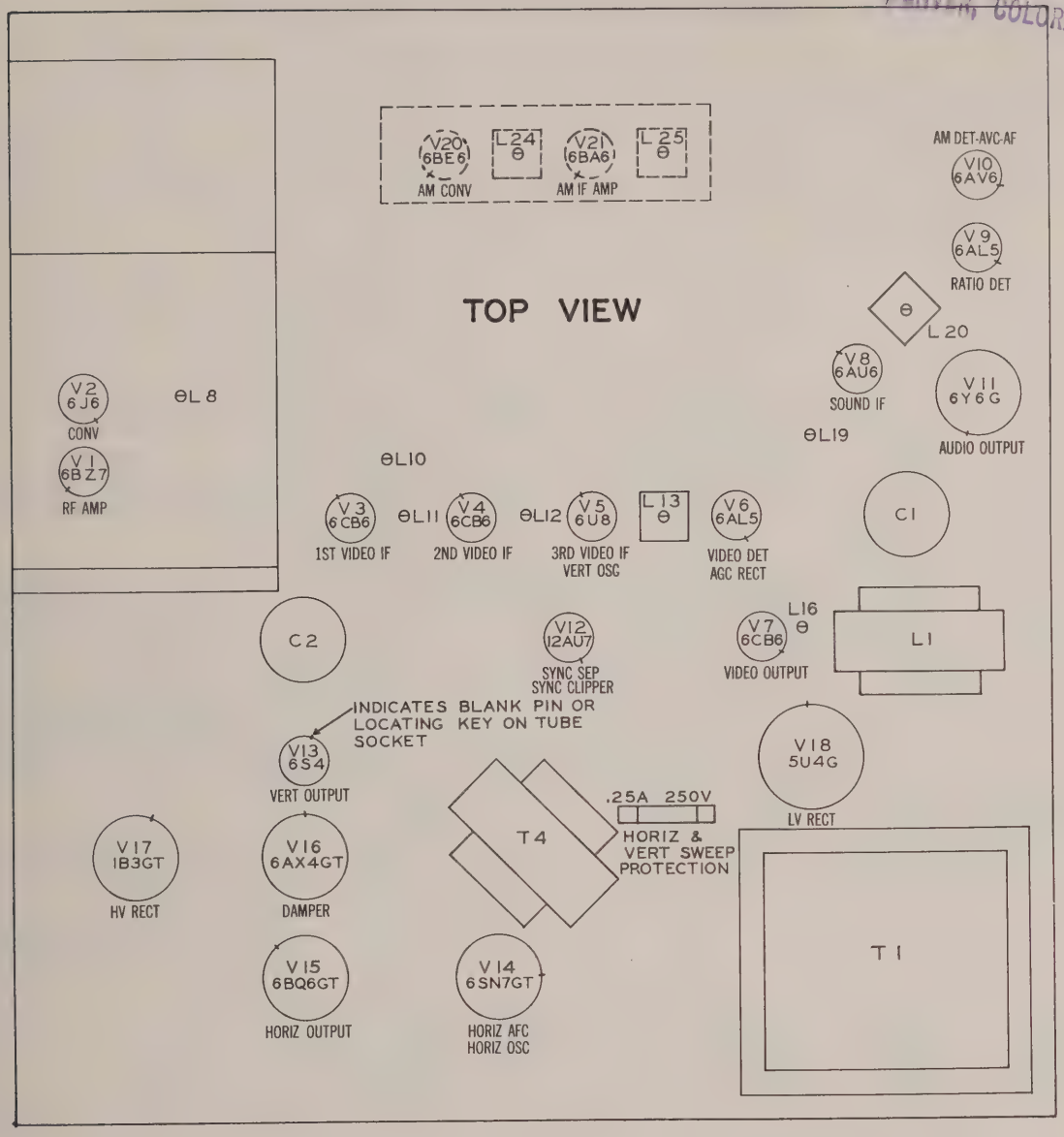


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V18

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V11
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V21
Has pic, no sound-V8, V9, V10, V11

SYNC FAILURE
No vert. sync.-V5, V12
No horiz. sync.-V12, V14
No vert. or horiz. sync.-V12

SWEEP FAILURE
No raster, has sound-V14, V15, V16, V17, V21 Fuse (M1)
No vertical deflection V5, V13
Poor vert. linearity or foldover-V5, V13
Poor horiz. linearity or foldover-V14, V15, V16
Narrow picture-V14, V15, V16, V17, V18
Vert. off freq.-V5, V12
Horiz. off freq.-V12, V14

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of R21 and R22. Connect the positive lead to chassis.
Set contrast control fully counter clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	27.25MC (Unmod)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	25.3MC	"	"	A2, A3	Adjust for maximum deflection. Alternate generator output to maintain 1 volt at VTVM.
3.	"	"	23.1MC	"	"	A4, A5	"
4.	Repeat Step 1.						

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.25MC 22.0MC 24.3MC 25.0MC 25.75MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A2 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A6, A7	Adjust for maximum deflection. Attenuate generator to maintain 1 Volt AT VTVM.
7.	"	"	"	"	DC probe to point (C) Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust so that 4.5 MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Connect a 10MMF capacitor from pin 5 (plate) of 6CB6 (V7) to pin 7 (cathode) of 6AU6 (V8).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to pin 2 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A9	Adjust for MINIMUM deflection.

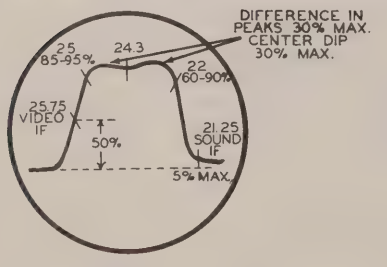


FIG. 1

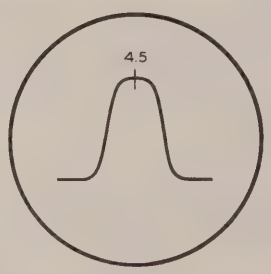


FIG. 2

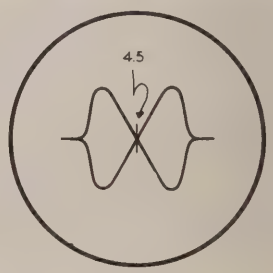


FIG. 3

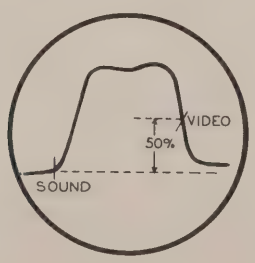


FIG. 4

FIG. 5

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove dummy converter tube and replace original 6J6 in its socket.
Connect bias battery as under Video IF Alignment.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A10	Adjust to place video marker at 50% on low frequency slope of response curve as in Fig. 4.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

RF AND MIXER ALIGNMENT

Connect bias battery as under video IF Alignment. If unable to obtain response curve of sufficient amplitude, remove battery and short the junction of R21 and R22 to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (D). Low side to chassis.	A22, A23, A24	Adjust for response similar to Fig. 5.
11.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 5. If markers fall below 70% on any channel make compromise adjustments of A22, A23, and A24 with channel switch set to that channel, then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

RADIO ALIGNMENT INSTRUCTIONS

RADIO ALIGNMENT

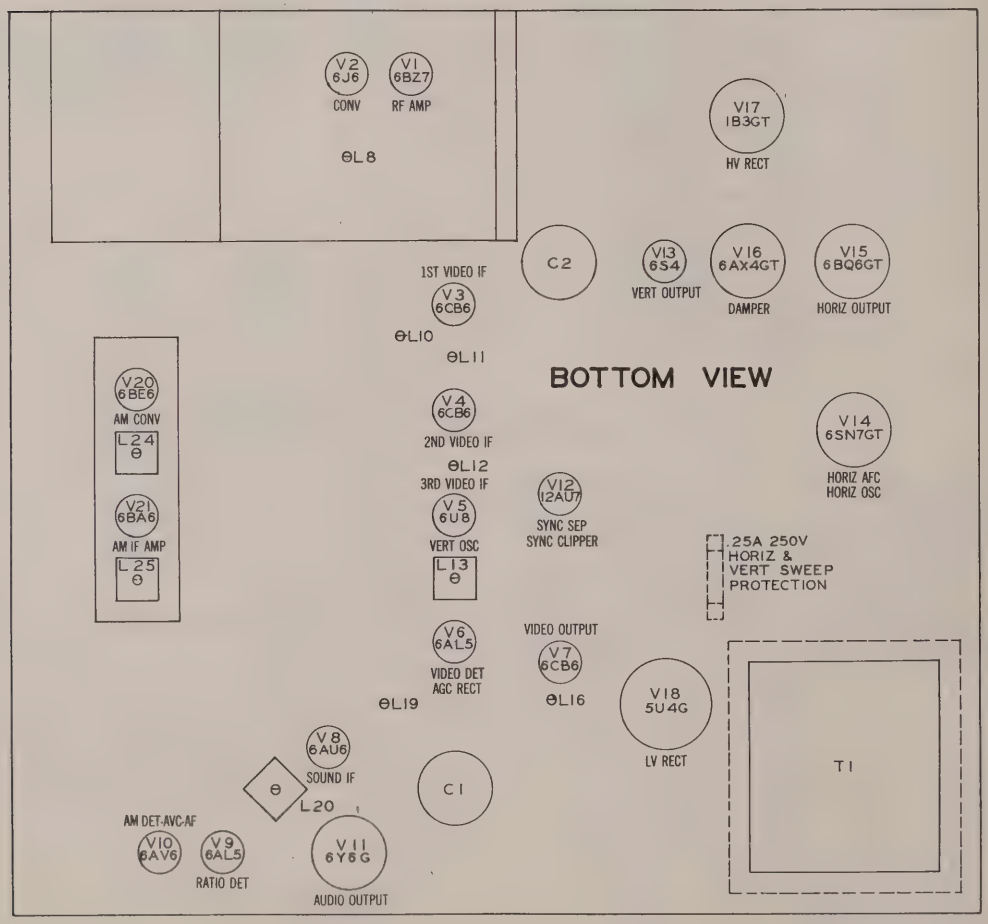
Turn selector switch to "Radio".
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screw driver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12.	.1MFD	High side to stator plates of antenna section of tuning gang. Low side to chassis.	455KC (400~Mod.	Radio	Tuning gang fully open.	Across voice coil.	A25, A26 A27, A28	Adjust for maximum output.
13.	"	"	1620KC	"	"	"	A29	"
14.		Loop	1400KC	"	Tune to 1400KC signal.	"	A30	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Note: A30 may not peak if antenna leads are not properly routed or seperated.

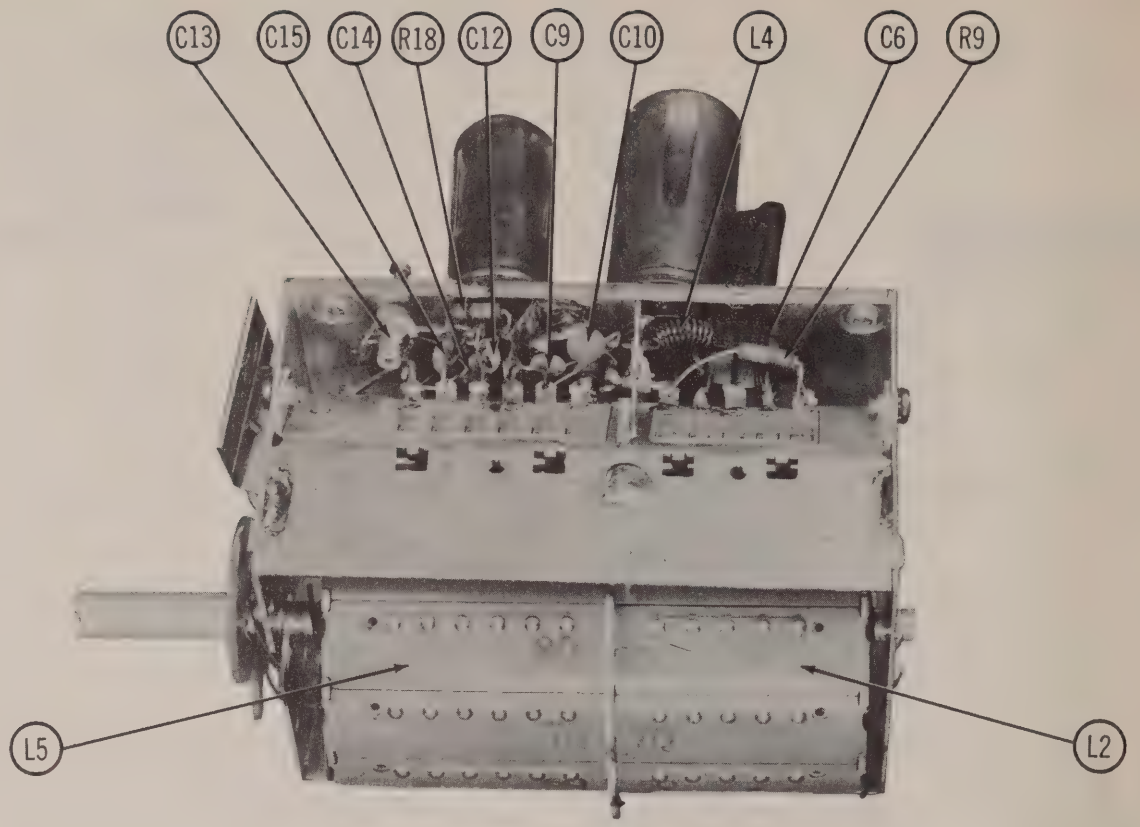
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	INF	1.7Meg	0Ω	.1Ω	0Ω	‡2KΩ	260KΩ	INF	0Ω
V 2	6J6	†15KΩ	†10KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	1.7Meg	47Ω	.1Ω	0Ω	†660Ω	†660Ω	0Ω		
V 4	6CB6	†330Ω	†430Ω	.1Ω	0Ω	‡400Ω	‡400Ω	†330Ω		
V 5	6U8	‡2.9Meg	.4Ω	†330Ω	0Ω	.1Ω	†330Ω	100Ω	0Ω	2Meg
V 6	6AL5	800Ω	5.6KΩ	.1Ω	0Ω	.4Ω	0Ω	2.3Meg		
V 7	6CB6	1 Meg	200Ω	.1Ω	0Ω	‡6.6KΩ	13KΩ	200Ω		
V 8	6AU6	470KΩ	0Ω	.1Ω	0Ω	†330Ω	†330Ω	68Ω		
V 9	6AL5	10KΩ	10KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 10	6AV6	4.7Meg	470Ω	.1Ω	0Ω	■1Meg	0Ω	†470KΩ		
V 11	6Y6GT	†1.8KΩ	.1Ω	‡285Ω	‡1.2KΩ	† 1Meg	INF	0Ω	15KΩ	
V 12	12AU7	13KΩ	2.7Meg	0Ω	0Ω	0Ω	10KΩ	2.7Meg	0Ω	.1Ω
V 13	6S4	INF	1.5KΩ	1 Meg	.1Ω	0Ω	1 Meg	INF	INF	♦2.2KΩ
V 14	6SN7GT	1.5Meg	‡ 40KΩ	410KΩ	480KΩ	‡820KΩ	0Ω	0Ω	.1Ω	
V 15	6BQ6GT	†8.2KΩ	0Ω	†100Ω	†8.6KΩ	1 Meg	100KΩ	.1Ω	47Ω	Top Cap ♦25Ω
V 16	6AX4GT	♦1.2KΩ	INF	200KΩ	INF	‡110Ω	♦1.2KΩ	.1Ω	0Ω	
V 17	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ♦625Ω
V 18	5U4G	‡35KΩ	40KΩ	‡26KΩ	25Ω	INF	26Ω	0Ω	40KΩ	
V 19	6BE6	22KΩ	.6Ω	■.1Ω	0Ω	■†2.2KΩ	■†12.2KΩ	2Meg		
V 20	6BA6	2Meg	0Ω	■.1Ω	0Ω	■†2.2KΩ	■†30KΩ	150Ω		
V 21	20DP4A	.1Ω	0Ω	Pin 10 1.2KΩ	Pin 11 250KΩ	Pin 12 0Ω				

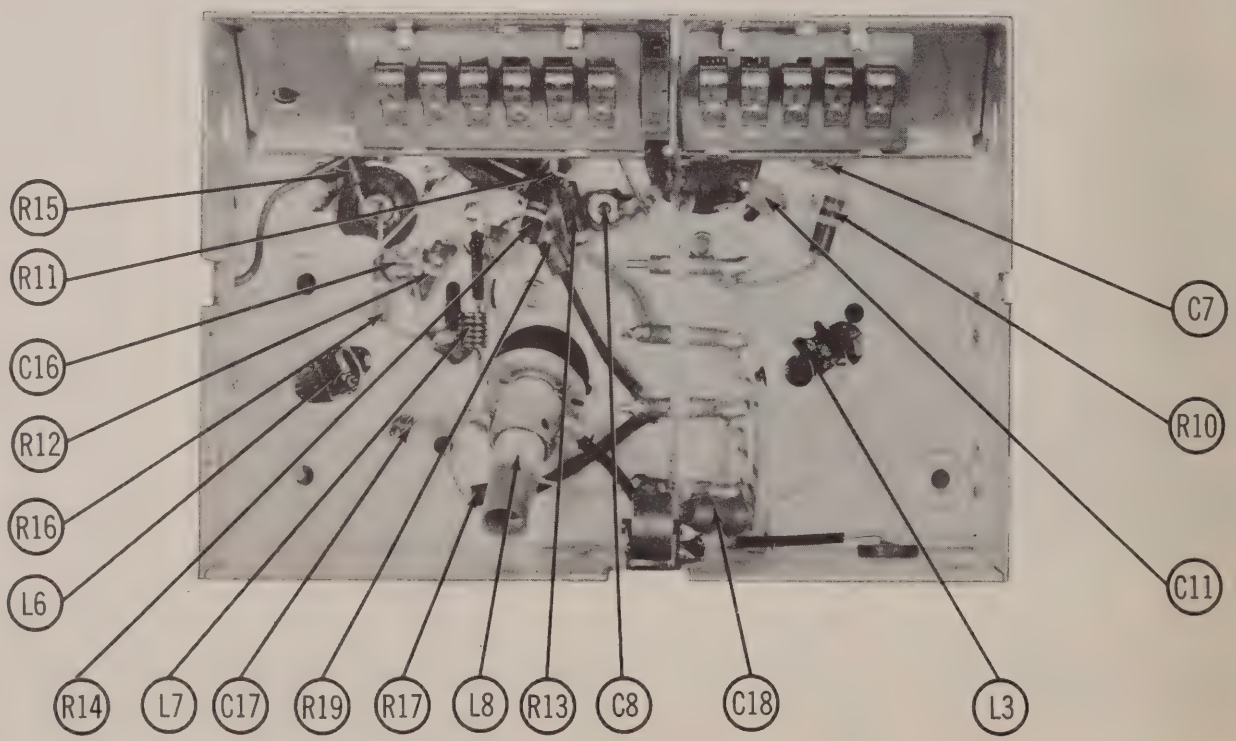
† MEASURED FROM 140 VOLT LINE.
‡ MEASURED FROM PIN 8 OF V18.
♦ MEASURED FROM PIN 3 OF V16
■ MEASURED IN RADIO POSITION
ALL MEASURED IN TV POSITION UNLESS NOTED



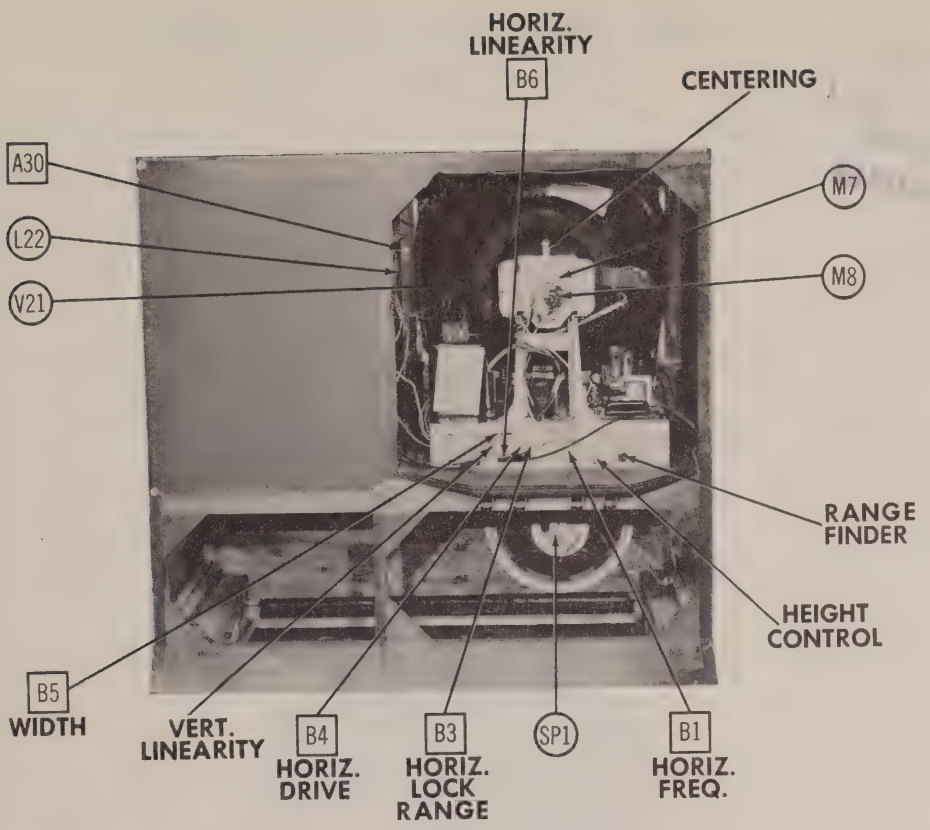
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably at test pattern.
Normally, horizontal sync may be obtained by alternately adjusting the horizontal hold control, the horizontal frequency slug (B1) and the horizontal waveform slug (B2). If slight adjustments fail to yield satisfactory horizontal sync, proceed as follows:
Connect the vertical amplifier of an oscilloscope through a 10MMF capacitor to terminal "C" of L21. Connect low side to chassis.
View the waveform on scope and adjust B2 for broad and narrow peaks of equal height as in Fig. 6. If necessary keep picture in sync by adjusting B1.
Turn the horizontal hold control fully counter clockwise. Momentarily switch to another channel and back again. If picture returns to sync adjust B1 and repeat the check as above until picture goes out of sync.
Turn the horizontal hold control slowly clockwise and note the least number of bars present just before the picture locks into sync.
If more than 3 bars are present adjust the horizontal lock trimmer (B3) clockwise. If fewer than 3 bars are present, adjust B3 counter clockwise. Repeat adjustment of B3 until 3 bars are present just before picture locks into sync.
Using the picture centering lever move the picture to the right until the blanking bar appears at left of picture. Adjust B1 to move picture to the right until the blanking bar begins to jitter or becomes unstable, then adjust B1 in opposite direction until picture moves to left and becomes stable.
Recenter picture by means of centering lever.
Adjust the horizontal drive trimmer (B4) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.
Adjust the width slug (B5) for a picture slightly wider than necessary to fill the picture mask horizontally.
Adjust the horizontal linearity slug (B6) for a picture that is symmetrical from left to right.
NOTE. Some receivers may have the horizontal hold control wired in reverse. In that case, during the preliminary to adjustment of the lock trimmer, B3, rotation of the horizontal hold control in a clockwise direction will only cause the picture to go farther out of sync.
To correct, either rewire control or make preliminary setting completely clockwise instead of counter clockwise.

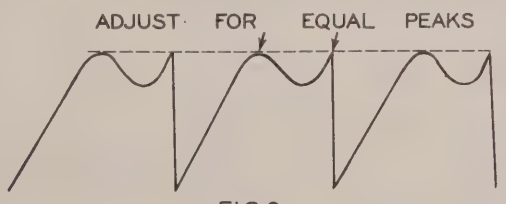


FIG.6

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs and TV-Radio-Phono switch from front panel. (Knobs are TV channel selector, fine tuning, radio selector & off -on volume)
2. Remove 10 wood screws & 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna. Remove AM antenna from cabinet wall.
4. Disconnect phono pickup, phono motor plugs & speaker plug.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under loss of high voltage.

INSUFFICIENT SWEEP

Check by substitution V14, V15, V16, V17 and V18.
Check amplitude of waveform W18.

If Low	If Correct
Check components of V14 and coupling network between V14 and V15.	Check components of V16 and V17, particularly C65, T3 and T7.

DRIVE LINES

If drive control does not correct this, substitute V15 and V16. Check components, especially C63, C67 and C68. Also T3.

COMPRESSED AT LEFT SIDE

Substitute V16 and check T3, T6 and other components.

FOLDS

Substitute V15 and V16. Check T3 and T6. Check associated components. Check T5.

VERTICAL

LOSS OF SWEEP

Check by stubstitution V5 and V13. Check waveform W6.

If Unsatisfactory	If Satisfactory
Check T2 and other components of vertical oscillator.	Check T4, T5 and coupling network between V5 and V13.

INSUFFICIENT SWEEP

Follow procedure outlined under loss of vertical sweep.

COMPRESSED AT BOTTOM

Substitute V13, Check C2B for open, C3 for leaking condition.

COMPRESSED AT TOP

Substitute V13. Check C54 and other components of vertical output including T4.

WILD VERTICAL OSCILLATOR (Fig. 1)

Fig. 1 illustrates the results of C53 being open.

FOLDS

Substitute V13 and check T4 and T5B.

Fig. 1

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V12 and V14. Check waveform W8.

If Unsatisfactory	If Satisfactory
Check components of V12 and grid circuit of V14.	Substitute for C61. Check C57 for short or open. Check C60 for short. Check value of R83. Check lead dressing in horizontal oscillator circuit.

CRITICAL SYNC

Follow procedure outlined under loss of horizontal sync.

PULLING PICTURE

Substitute V14, Check components particularly C60.

VERTICAL

LOSS OF SYNC

Check by substitution V5, V12 and V13. Check waveform W5.

If Unsatisfactory	If Satisfactory
Check components of V12 and integrator	Check T2 and other components of V5B. Check coupling network V5 and V13.

CRITICAL SYNC

Substitute V5, V12 and V13. Follow procedure outlined under loss of sync.

TRIGGERING

Substitute V5. Dress filament leads away from grid lead and components of V5B.

VIDEO

SOUND BARS

Check adjustment of A9 (4.5MC Trap). Check setting of local oscillator and alignment of IF stages.

POOR RESOLUTION

Check alignment of Video IF stages. If this does not correct trouble, substitute Video IF tubes and check circuit components.

SMEAR

Check R38 and R39 for change in value. Check L6 and L17 for open. Check coupling capacitor C31 by substitution. Check Video Detector and IF stages for overloading.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tuner, Video IF, detector and Video Output tube for filament to cathode leakage.

POOR CONTRAST

Check amplitude of waveform W1.

If Insufficient	If Sufficient
Substitute V3, V4, V5 and V6. Check alignment of IF stages.	Check waveform W2.

Check waveform W2.

If Insufficient	If Sufficient
Substitute V7 and check associated components. Check C33 for open.	Check picture tube and R42.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp. - Vert. Oscillator	6U8	6U8	9-AE	
V6	Video Detector - AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	6CB6	6CB6	7CM	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AM Detector - AVC-AF Amp.	6AV6	6AV6	7BT	
V11	Audio Output	6Y6G	6Y6G	7S	
V12	Sync Separator Sync Clipper	12AU7	12AU7	9A	
V13	Vert. Output	6S4	6S4	9AC	
V14	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	
V19	Converter (AM)	6BE6	6BE6	7CH	
V20	IF Amplifier (AM)	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V21	20DP4A	20DP4A		12D	① Circuit changes necessary
		20DP4	①	12D	
		20HP4	①	12C	
		20HP4A	①	12C	
		20LP4	①	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	350	67C15-23	E4D581		CO23			TVL-4609	
B	■40	350				BR6025				
C	▲60	200								
D	20	150								
C2A	▲80	350	67C15-22	AFH3-142		C109		FP375	TVL-3722	
B	▲100	50								
C3	20	475	67A21-1	PRS500/16		BR2050A		TC83	TVA-1804	
C4	80	350	67C15-64	AFH1-42		XA 011		FP138	TVL-1630	
C5	4	50	67A4-9	PRS150/4		BR550		TC30	TVA-1303	
C6	3		94D47-54							
C7	3-9		98A45-96		829-10					
C8	.5-3		98A45-23		829-3			CT565A		
C9	47		94D47-50	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C10	1.5		94D46-84	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C11	1000		98A45-24	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	47		94D47-50	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C13	.5-3		98A45-23		829-3			CT565A		
C14	10		98A45-64	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C15	5		94D47-52	SI5N750				NT-555	5TCUB-V5	
C16	1000		98A45-24	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C17	6.8		94D47-53	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C18	120		98A45-78	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C19	1000		65C6-41	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C20	1000		65C6-41	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C21	2.2		65C6-86		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C22	15		65C6-50	SI15NP0	TCZ-15		NP0K-150	ZT-5415	5TCC-Q15	
C23A	1500		65A17-2	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C24	1000		65C6-41	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C25	5000		65C10-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C26A	4000		67A17-1	BPD-2X004	D6-402	TM5DD4		DCD-524	5HK-2D4	
B	4000				D6-402					
C27	27		65C6-87	SI27	D6-270		GP1K-270	UC-5427	5GA-Q27	
C28	120	500	65C6-66	1468-00015	D6-121	5W5T15	GP2K-151	MC236	1FM-315	
C29	.22	200	64B9-5	P488-22		PTE4P22		PT4025	2TM-P22	
C30	1000		65C6-41	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C31	.1	200	64B9-7	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C32	6.8		65C6-71	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C33	.22	400	64B9-5	P488-22		PTE4P22		PT4025	2TM-P22	Note 1
C34	6.8		65B6-71	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C35	20		65B6-51	SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C36	5000		65C10-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	180		65B6-59							
C38	500		65C6-6	SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C39	.0022	600	64B9-17	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C40	.01	400	64B9-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C41	.01	400	64B9-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C42	50		65C6-4	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C43	.0047	600	64B9-15	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C44	.0022	600	64B9-17	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6D22	6TM-D22	
C45	100		65C6-3	BPD-0001	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C46	.01	400	64B9-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C47	.01	400	64B9-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C48	150		†63B6-4	SI150	†PC-178	TM5T15	GP2K-151	UC-5315	5GA-T15	
C49	.01	400	64B9-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C50	10000		85C10-3	BPD-01	DD-103	TM5B1	821-01	DC-511	5HK-81	
C51A	.002			P688-002		PTE6D2		PT622		
B	.005		●63B6-2	P688-005	●PC-100	PTE6D5	●1405-01	PT625	●10IC1	
C	.005			P688-005		PTE6D5		PT525		
C52	4700	500	85B21-472	1464-005		1DR5D5		MCB465	MS-25	
C53	.047	600	64A2-14	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C54	.1	600	64B9-7	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C55	82	500	85B21 -820							
C56	68	500	85B21-680	1469-00007		5R5Q7			MS-47	
C57	.1	200	64B9-7	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C58	.022	400	64B9-11	P488-022	DF-303	PTE4S22		PT4122	4TM-S22	
C59	.47	400	64B9-3	P488-47		PTE4P47		PT405	4TM-P47	
C60	.047	400	64B9-9	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C61	270	500	65B21-271	1469-0003		5R5T3		MCB241	MS-33	
C62	.01	400	64B9-13	P488-01		PTE4S1		PT411	4TM-S1	
C63	820	500								
C64	680	500	65B21-681	1473-0007		3R5T7			MS-37	
C65	.047	400	64A2-14	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C66	.1	200	64B9-7	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C67	.047	400	64A2-14	P488-047		PTE4S47		PT4147	4TM-S47	
C68	.047	400	64A2-14	P488-047		PTE4S47		PT4147	4TM-S47	
C69	.1	400	64B9-7	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C70	47	1500	65B1-64							
C72	4	500	85C6-79	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C73	.1	400	64B5-5	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C74	.1	200	64B5-5	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C75	5000		65C10-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C76	.1	400	64B5-5	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C77	100		65C6-3	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	

Note 1. Early Models use .1MFD in this application.
† Items C48, R41A, R41B are combined in one unit. Some Models use separate items.
● Items C51A, C51B, C51C, R67A, R67B, R67C are combined in one unit. Some Models use separate items.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	75C2-16	QI9-137X	AT-112	BT-74-S	UT-443	Volume Tap@500KΩ-Note 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	2 Meg	½	75B13-23	QII-139	AG-83-S	AB-75	U-56	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	100KΩ	½	75B13-25	QII-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft†		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	1000Ω	½	75B13-21	QI7-108	AG-8-S	AB-5	U-4	Contrast
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	1.5Meg	½	75B17-3	QJ-400●	RTV-394		UF26L	Vert. Hold-Panel-Note 2
B	50KΩ		Not Req.				UR54L	Horiz. Hold- Rear
R6A	2 Meg	½	75B1-53	QII-139	AG-83-S	B-75	U-56	DX RangeFinder
B2	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R6A
R7A	2.5Meg	½	75B13-3	QII-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	3000Ω	½	75B13-7	QII-112	AG-15-S	AB-8	U-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A

● CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-138 & P1-121 (Panel) B11-123 & R12-129 (Rear).

Note 1. Some models combine the volume & contrast into a dual concentrikit part No. 75B11-21.
Note 2. In some models the vert. hold & horiz. hold are single control.
Vert. hold part No. 75B13-26. Horiz. hold part No. 75B13-23.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ADMIRAL PART No	REPLACEMENT DATA IRC PART No.	NOTES
R9	15KΩ	½	98A45-67	BTS-15K	
R10	47KΩ	½	98A45-17		
R11	100KΩ	½	94C37-87		
R12	160KΩ	½	60B8-164		
R13	1500Ω	½	60B8-153	BTS-1500	
R14	100KΩ-5%	½	94C37-87		
R15	10KΩ	½	98A45-18	BTS-10K	
R16	220KΩ	½	98A45-21	BTS-220K	
R17	8200Ω-5%	½	60B8-822		
R18	10KΩ	½	98A45-18		
R19	15KΩ	½	98A45-67	BTS-15K	
R20	330Ω	½	60B8-331	BTS-330	
R21	1000Ω	½	60B8-102	BTS-1000	
R22	1000Ω	½	60B8-102	BTS-1000	
R23	8200Ω-5%	½	60B7-822	BTS-8200-5%	
R24	47Ω	½	60B28-45		
R25	330Ω	½	60B8-331	BTS-330	
R26	22KΩ	½	60B8-223	BTS-22K	
R27	100Ω	½	60B28-19	BTS-100	
R28	330Ω	½	60B8-331	BTS-330	
R29	330Ω	½	60B8-331	BTS-330	
R30	10KΩ-5%	½	60B7-103		
R31	100Ω	½	60B8-101	BTS-100	
R32	330Ω	½	60B8-331	BTS-330	
R33	33KΩ	½	60B8-333	BTS-33K	
R34	820KΩ	½	60B8-824	BTS-820K	
R35	5600Ω	½	60B8-562	BTS-5600	
R36	1 Meg	½	60B8-105	BTS-1 Meg	
R37	33KΩ	½	60B8-333	BTS-33K	
R38	2700Ω	½	60B8-272	BTS-2700	
R39	2700Ω	½	60B8-272	BTS-2700	
R40	22KΩ	½	60B8-223	BTS-22K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R41 A	15KΩ	½	† 63B6-4	BTS-15K	
B	270KΩ	½		BTS-270K	
R43	180KΩ	½	60B8-184	BTS-180K	Note 3
R43	470KΩ	½	60B8-474		
R44	68Ω	½	60B28-31		
R45	330Ω	½	60B8-331	BTS-330	
R46	390Ω	½	60B8-391	BTS-390	
R47	47KΩ	1		BTA-47K	
R48	10KΩ	½	60B8-103	BTS-10K	
R49	10KΩ	½	60B8-103	BTS-10K	
R50	82KΩ	½	60B8-823	BTS-82K	
R51	47KΩ	½	60B8- 473	BTS-47K	
R52	470Ω	½	60B8-471	BTS-470	
R53	4.7Meg	½	60B8-475	BTS-4.7Meg	
R54	470KΩ	½	60B8-474	BTS-470K	
R55	1 Meg	½	60B8-105	BTS-1 Meg	
R56	4700Ω-5%	½	60B7-472	BTS-4700-5%	
R57	2000Ω-5%	½	60B7-202	BTS-2000-5%	
R58	2500Ω	7.5	61A1-23	1 3/4A-2500	
R59	15KΩ	½	60B8-153	BTS-15K	
R60	1200Ω	5		1 3/4A-1200	Note 1
R61	2.7Meg	½	60B8-275	BTS-2.7Meg	
R62	47KΩ	1		BTA-12K	
R63	12KΩ	½	60B8-123	BTS-12K	
R64	2.7Meg	½	60B8-275	BTS-2.7Meg	
R65	33KΩ	2	60B20-333	BTB-33K	Note 4
R66	15KΩ	½	60B8-153	BTS-15K	Note 5
R67A	22KΩ	½		BTS-22K	
B	8200Ω	½	●63B6-2	BTS-8200	
C	8200Ω	½		BTS-8200	
R68	1.2Meg	½	60B8-125	BTS-1.2Meg	
R69	1 Meg	½	60B8-105	BTS-1 Meg	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R70	10KΩ-5%	½	60B7-103	BTS-10K-5%	
R71	1 Meg	½	60B8-105	BTS-1 Meg	
R72	820Ω	½	60B8-821	BTS-820	
R73	560Ω	½	60B8-561	BTS-560	
R74	560Ω	½	60B8-561	BTS-560	
R75	68KΩ	½	60B8-683	BTS-68K	
R76	22KΩ	½	60B8-223	BTS-22K	
R77	330KΩ	½	60B8-334	BTS-330K	
R78	820KΩ	½	60B8-824	BTS-820K	
R79	82KΩ	½	60B8-823	BTS-82K	
R80	330KΩ	½	60B8-334	BTS-330K	
R81	3900Ω	½	60B8-392	BTS-3900	
R82	150KΩ	½	60B8-154	BTS-150K	
R83	150KΩ	½	60B8-154	BTS-150K	
R84	8200Ω	½	60B8-822	BTS-8200	
R85	820KΩ	½	60B8-824	BTS-820K	
R86	82KΩ	½	60B8-823	BTS-82K	
R87	1 Meg	½	60B8-105	BTS-1 Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R88	68Ω	½	60B28-44		
R89	82Ω	½	60B28-31		
R90	47Ω	1	60B14-470	BW-1-47	
R91	8200Ω	2	60B20-822	BTB-8200	
R92	1200Ω	2	60B 20-122	BTB-1200	
R93	1000Ω	2	60B20-102	BTB-1000	
R94	1000Ω	½	60B8-102	BTS-1000	
R95	4.7Ω	½	60B 28-41		
R96	4.7Ω	½	60B28-41		
R97	470KΩ	½	60B8-474	BTS-470K	Note 2
R98	22KΩ	½	60B8-223	BTS-22K	
R99	10KΩ	1	60B14-103	BTA-10K	
R100	150Ω	½	60B8-151	BTS-150	
R101	27KΩ	1	60B14-273	BTA-27K	
R102	1 Meg	½	60B8-105	BTS-1 Meg	
R103	1000Ω	2	60B20-102	BTB-1000	
R104	33KΩ	2	60B20-333	BTB-33K	Note 6
R105	27KΩ	2	60B20-273	BTB-27K	Note 6

Note 1. Some models may use two 2200Ω resistor (2 Watt) in parallel in this application. In TV only sets this resistor is 1200Ω.
Note 2. Some models may use a 270KΩ resistor (1 Watt) in this application.
Note † Items R41A, R41B, C48 are combined in one unit. Some models use seperate items.
● Items R67A, R67B, R67C, C51A, C51B, C51C are combined in one unit. Some models use seperate items .
Note 3. Early models use a 470KΩ resistor in this application.
Note 4. In TV only sets an 18KΩ resistor (1 Watt) is used in this application.
Note 5. In TV only sets a 22KΩ resistor is used in this application.
Note 6. Some Models use a single 15KΩ resistor (5 watt) in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @1.5A	560VCT .200 ADC	5VAC @3A	6.3VAC @9.1A	80C35-1	P-8164	P-3077			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	190Ω	1060Ω	79A18-4	A-8125	A-3003	TBO-5	A-97X	208T9	Vert. Osc.Trans.
T3	654Ω tap @40, 29Ω, 54Ω,	0Ω	79D41-1	A-8135					Horiz. Output Trans.
T4	1050Ω	7.5Ω	79B40-2	A-8123 ①	A-3037①	TSO-8 ①	A-102X①	222T1	Vert. Output Trans.
T5A	34Ω		94C51-1	DY-11A		TY-7	Y-19		Horiz. Deflection Coils
B	44Ω								Vert. Deflection Coils
T6	15Ω		94A-50-1				WC-12	213R1	Horiz. Lin. Coil
T7	30Ω tap @3.5Ω		94A-49-1						Width Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	2.24KΩ	3.3Ω	149Ω	.45Ω	Part of Spkr.	A-3876①	A-3018 ①	RO-2 ①	S-2X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	12"	PM	3.3Ω	78B77-1 78B56-1 ① 78B76-1 ②	12J11	12A31	① Alternate 12" Speaker ② 8" Speaker used in Model 321DX26

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA TRIAD PART No.
L1	.180ADC	94Ω	2.5 Hy.	74B18-2	C-2325 ①	C-2994 ①	TR-3300	C-21X

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MILLER PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2A	Ant. Coil	0Ω CT	0Ω	94D46-52			Channel 2, Note 1
B	Ant. Coil	0Ω CT	0Ω	94D46-53			Channel 3, Note 2
C	Ant. Coil	0Ω CT	0Ω	94D 46-54			Channel 4, Note 3
D	Ant. Coil	0Ω CT	0Ω	94D46-55			Channel 5, Note 4
E	Ant. Coil	0Ω CT	0Ω	94D46-56			Channel 6, Note 5
F	Ant. Coil	0Ω CT	0Ω	94D46-57			Channel 7, Note 6
G	Ant. Coil	0Ω CT	0Ω	94D46-58			Channel 8, Note 7
H	Ant. Coil	0Ω CT	0Ω	94D46-59			Channel 9, Note 8
I	Ant. Coil	0Ω CT	0Ω	94D46-60			Channel 10, Note 9
J	Ant. Coil	0Ω CT	0Ω	94D46-61			Channel 11, Note 10
K	Ant. Coil	0Ω CT	0Ω	94D46-62			Channel 12, Note 11
L	Ant. Coil	0Ω CT	0Ω	94D46-63			Channel 13, Note 12

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MILLER PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L3	Fil. Choke	0Ω		98A45-13			
L4	Neutr.Coil	0Ω					
L5A	RF, Mixer Grid & Osc. Coil	0Ω		94D46-72			Channel 2, Note 13
B	RF, Mixer Grid & Osc. Coil	0Ω		94D46-73			Channel 3, Note 14
C	RF, Mixer Grid & Osc. Coil	0Ω		94D46-74			Channel 4, Note 15
D	RF, Mixer Grid & Osc. Coil	0Ω		94D46-75			Channel 5, Note 16
E	RF, Mixer Grid & Osc. Coil	0Ω		94D46-76			Channel 6, Note 17
F	RF, Mixer Grid & Osc. Coil	0Ω		94D46-77			Channel 7, Note 18
G	RF, Mixer Grid & Osc. Coil	0Ω		94D46-78			Channel 8, Note 19
H	RF, Mixer Grid & Osc. Coil	0Ω		94D46-79			Channel 9, Note 20
I	RF, Mixer Grid & Osc. Coil	0Ω		94D46-80			Channel 10, Note 21
J	RF, Mixer Grid & Osc. Coil	0Ω		94D46-81			Channel 11, Note 22
K	RF, Mixer Grid & Osc. Coil	0Ω		94D46-82			Channel 12, Note 23
L	RF, Mixer Grid & Osc. Coil	0Ω		94D46-83			Channel 13, Note 24
L6	Fil. Choke	0Ω		96A45-14			
L7	RF Choke	0Ω		94D46-86			
L8	1st. Video IF	.8Ω		94D46-85	6189 *	17-1004	
L9	Fil. Choke	0Ω		73A2-5	4604		1.5 Microhenries
L10	27.25MC Trap	.2Ω		72C99-23	6171A *		Includes C21 & C22
L11	2nd. Video IF	.4Ω	.4Ω	72C99-25		17-1062	See Note 25
L12	3rd. Video IF	.4Ω	.4Ω	72C96-22		17-1063	
L13	4th. Video IF	.4Ω	.8Ω	72B107-1		17-1064	
L14	Series Peaking Coil	5.3Ω		73A5-15			Wound on 4.7KΩ resistor
L15	Shunt Peaking Coil	17Ω		73A5-7	6174	19-4500	500 Microhenries
L16	4.5MC Trap	5Ω		72B99-6	1470	20-1004	
L17	Series Peaking Coil	6.8Ω		73A5-13			Wound on 33KΩ resistor
L18	Shunt Peaking Coil	8Ω		73A5-9			Wound on 10KΩ resistor
L19	Sound IF	6.5Ω		72B99-7	1470	20-1005	
L20	Ratio Det.	2.8Ω	.4ΩCT	72B68-1	1468 †	17-1033 †	Tertiary Winding - 1.3Ω
L21	Horiz. Osc.	80Ω		69B110	6183	20-1402	Pri. tapped @ 55Ω, Horiz. waveform winding 44Ω
L22	Loop Ant.	.4Ω		69C155-2			
L23	Osc. Coil	6.2Ω		39A52-4	71-OSC ■		Tapped @ .6Ω
L24	Input IF	17Ω	17.5Ω	72B28-7	12-C1	16-6758	
L25	Output IF	17Ω	17.5Ω	72B28-7	12-C2	16-6758	

Note 1. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc) uses part #94D52-52 in this application.
Note 2. Alternate Tuner 94D52-1 (stamped 2 H, 3H, etc) uses part #94D52-53 in this application.
Note 3. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-54 in this application.
Note 4. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-55 in this application.
Note 5. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.)uses part #94D52-56 in this application.
Note 6. Alternate Tuner 94D52-1 (stamped 2H, 3H,etc.) uses part #94D52-57 in this application.
Note 7. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-58 in this application.
Note 8. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-59 in this application.
Note 9. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-60 in this application.
Note 10. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-61 in this application.
Note 11. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.,) uses part #94D52-62 in this application.
Note 12. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-63 in this application.
Note 13. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.)uses part #94D52-72 in this application.
Note 14. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.)uses part #94D52-73 in this application.
Note 15. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-74 in this application.
Note 16. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-75 in this application.
Note 17. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-76 in this application.
Note 18. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-77 in this application.
Note 19. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-78 in this application.
Note 20. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-79 in this application.
Note 21. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-80 in this application.
Note 22. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-81 in this application.
Note 23. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-82 in this application.
Note 24. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #94D52-83 in this application.
Note 25. Alternate Tuner 94D52-1 (stamped 2H, 3H, etc.) uses part #72C96-21 in this application.

* Enlarge mounting hole.
† When using Millor or Meissner replacement disconnect C37.
■ Drill mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ADMIRAL PART No. FUSE	ADMIRAL PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	8AG	1/4A 250V	84A4-2	84A5-1	362.250 (8AG-1/4A)	387001	AGX 1/4	4520

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	ADMIRAL PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	409A13	AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ADMIRAL PART No.	WALCO PART No.	JENSEN PART No.	
M3	98A15-19	W-30AGA or W-30AGS	JP-312 or JPS-312	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ADMIRAL PART No.		
M4	Bayonet	6-8	.25	Blue	81A1-5		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	RF Tuner	94D46-2	
M6	Switch	77C43	Function Selector
M7	Focus Magnet Assy		Includes Centering Magnet
M8	Ion Trap	94A15-3	
M9A	Tuning Capacitor	68B53-1	12-422MMF, 17-120MMF, Horiz. Mount (used in late series)
B	Tuning Capacitor	68B53	12-422MMF, 17-120MMF, Vert. Mount (used in early series)
B3, B4	Trimmer Capacitor Assembly	66A32-3	Dual 10-160MMF, Horiz. Locking Range, Horiz. Drive
A30	Trimmer Capacitor	66B8-5	AM Antenna
	Cabinet	35E224-1	Walnut, Model 321DX15
	Cabinet	35E224-2	Mahogany, Model 321DX16
	Cabinet	35E224-3	Blond, Model 321DX17
	Cabinet	35E227-5	Mahogany, Model 321DX16
	Back	A3764	
	Safety Glass	21B62-7	
	Moulding	35E224-56	Model 321DX15
	Moulding	35E224-57	Model 321DX16
	Moulding	35E224-58	Model 321DX17
	Moulding	35E227-51	Model 321DX26
	Mask	23D128	
	Control Panel	23D129-1	(less Door)
	Door	23D129-5	
	Knob	33C53-23	Channel Selector, Maroon with gold insert
	Knob	33C53-26	Channel Selector, Maroon, less insert
	Knob	33C53-29	Channel Selector, Brown with gold insert
	Knob	33C53-1	Channel Selector, Ebony
	Knob	33D88-21	Fine Tuning, Maroon with gold ring
	Knob	33D88-23	Fine Tuning, Maroon, less gold ring
	Knob	33C53-18	Fine Tuning, Brown
	Knob	33C53-2	Fine Tuning, Ebony
	Knob	33D88-20	Picture, Maroon, with gold ring
	Knob	33D88-22	Picture, Maroon, less gold ring
	Knob	33C53-20	Picture, Brown
	Knob	33C53-4	Picture, Ebony
	Knob	33C53-24	Off/On Volume, Maroon, 2 1/4" Dia., with gold insert
	Knob	33C53-25	Off/On Volume, Maroon, 2 1/8" Dia., with gold insert
	Knob	33C53-27	Off/On Volume, Maroon, less insert
	Knob	33C53-31	Off/On Volume, Brown, with gold insert
	Knob	33C53-3	Off/On Volume, Ebony
	Knob	33A92-3	Vert. Hold, Maroon
	Knob	33A23-4	DX Range Finder, Ebony
	Knob	33B90-4	Function Selector
	Knob	33D88-19	Tuning (Radio)

TROUBLE SHOOTING AIDS (CONT.)

AUDIO

WEAK OR NO SOUND

Substitute V8, V9, V10 and V11.
Check alignment of ratio detector and Sound IF stages. Check alignment of Video IF stages.

BUZZ

Adjust ratio detector secondary for minimum buzz. If still noticeable, substitute V9 and readjust.

DISTORTED

Check audio amplifier stages V10 and V11 using audio signal generator.

If Undistorted	If Distorted
Check adjustment of ratio detector and Sound IF stages. Check Video IF alignment.	Check components of amplifier stage where distortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse in horizontal sweep sweep circuit. Check by substitution V14, V15, V16 and V17.
Check waveform W11.

If Unsatisfactory	If Satisfactory
Check L21 and other components of V14, particularly C64.	Check T3, T6, T7 and associated components. Check C65.

INSUFFICIENT HIGH VOLTAGE

If substituting V15, V16 and V17 fails to correct this, follow procedure under "Loss of High Voltage".

BLOOMING

Check by substitution V15, V16, V17 and V18. Check components of T3. Check R95 for increase in value.

POWER

SMALL RASTER, WEAK SOUND

Substitute V18. Check B plus circuit for shorts and replace any leaky capacitor.

DIM PICTURE

Check picture. Follow procedure outlined under "Small Raster, Weak Sound". Also, check Boost B+ circuit components.

GENERAL

NO PICTURE, NO SOUND, NO SNOW

Check by substitution V2, V3, V4 and V6. Check associated components.

WEAK PICTURE, WEAK SOUND

Substitute V5 and check components.

SOUND, BUT NO PICTURE

Substitute V7 and check associated components.

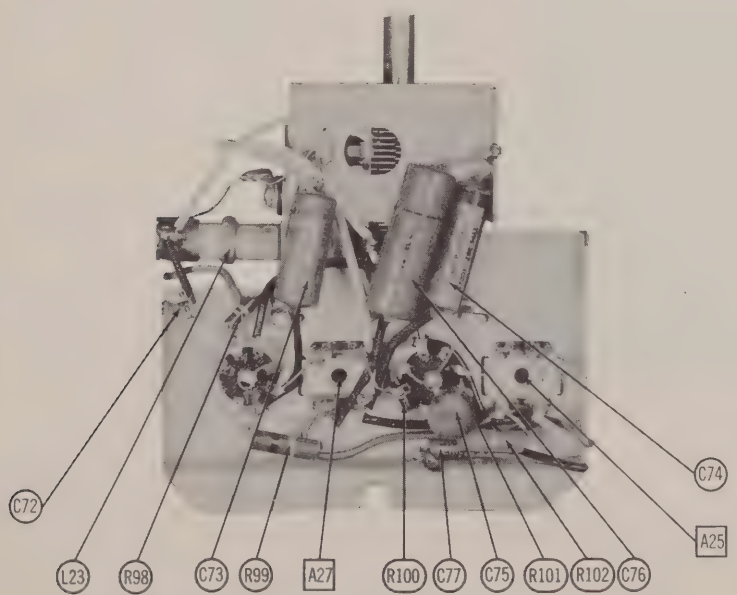
SNOWY PICTURE, NO SOUND

Substitute V1 and check tuner components.

INTERMITTENT STREAKS

Check high voltage circuit for corona discharge and arcing.

The Trouble - Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.



RADIO CHASSIS - BOTTOM VIEW

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fing Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

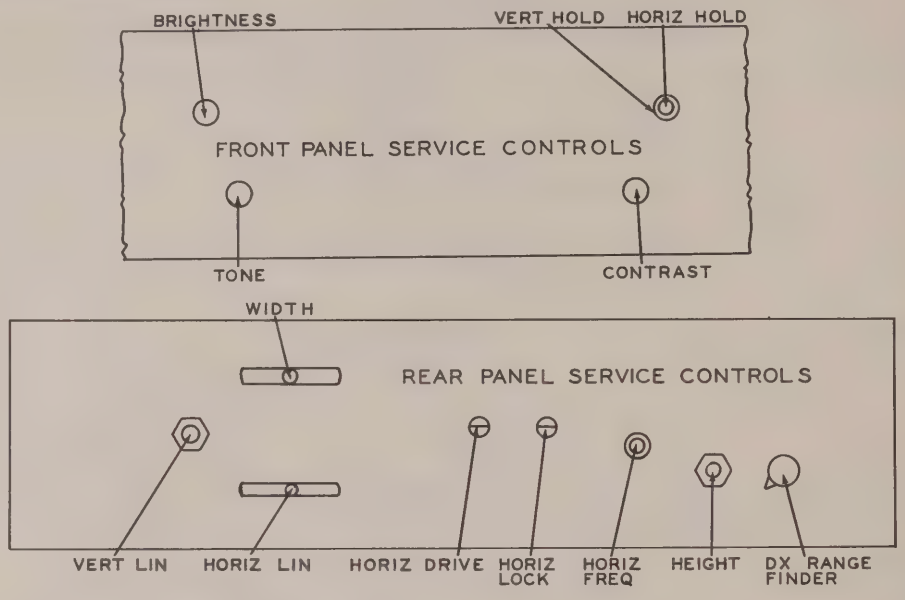
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 4 wood screws holding wood strip at top of cabinet front. Remove wood strip and safety glass . Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS-DX RANGE FINDER CONTROL

Rotate Range finder control to "o" setting . Tune to strongest available TV signal. Set contrast control fully clockwise. Adjust DX Range finder control clockwise to point of best contrast and minimum snow in picture. Check sync stability by switching off channel and back again. If necessary make slight readjustment of DX Range finder control for stable synchonization and to eliminate any bending or overloading of the picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust of the Horiz. Oscillator Circuit can be made from the rear panel of the chassis. Set the Horiz. Hold Control at the mid-position of its range and adjust the Horiz. Freq. slug until the picture synchronizes horizontally. If synchronization cannot be obtained by the above adjustment see HORIZ. SWEEP CIRCUIT ADJUSTMENTS on page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT

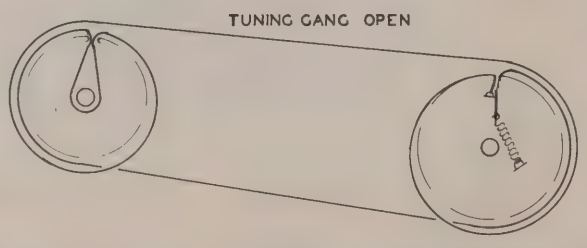
To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary (L20) located on bottom of chassis (See tube placement chart). In some chassis accessible from top using proper alignment tool.

FUSES

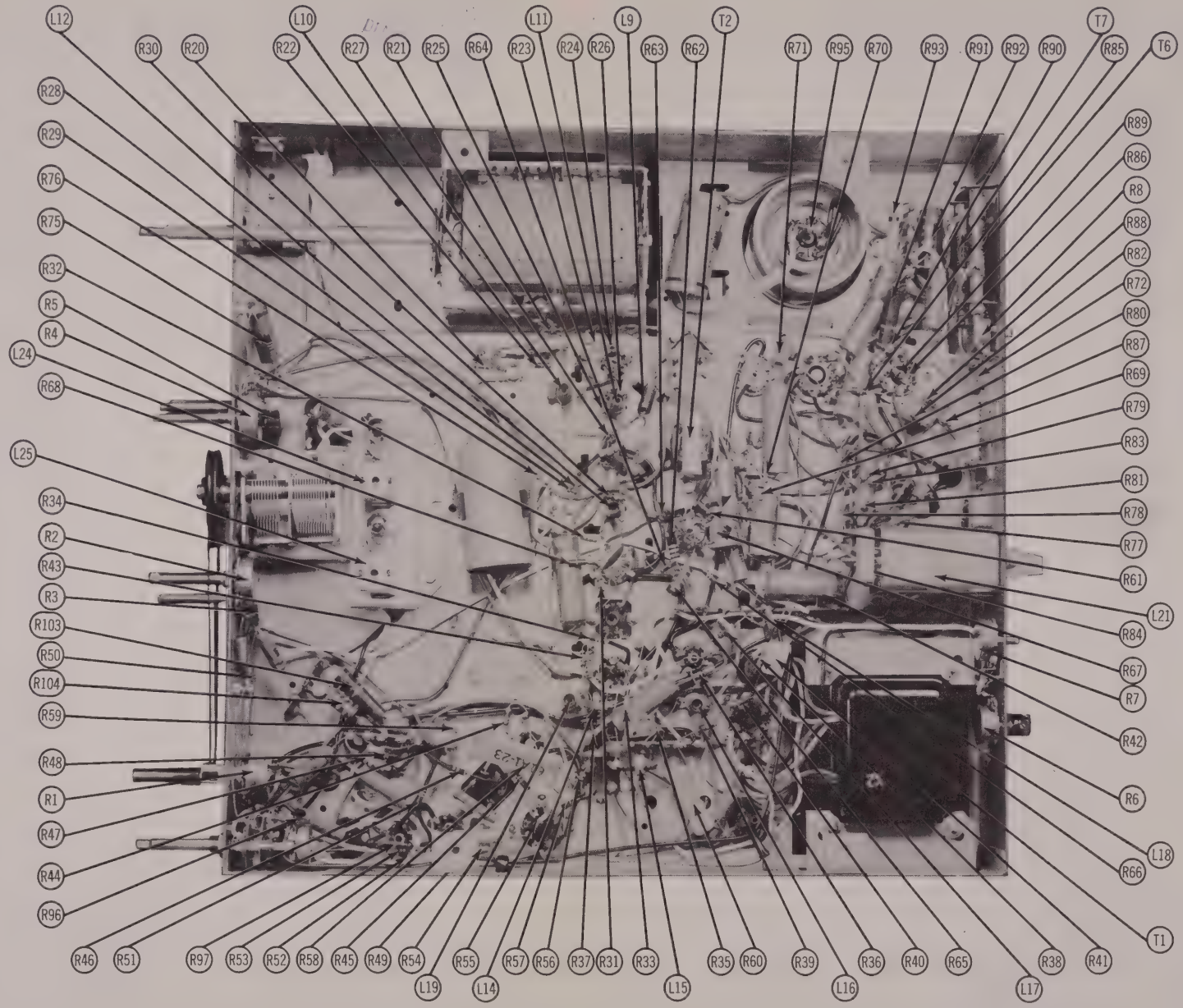
Two fuses are used. One for Horiz. Sweep Circuit protection and one for L. V. Power Supply protection (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of centering level on the P. M. Focusing assembly. Adjust the centeing lever from side to side, and up and down until the picture is properly centered.

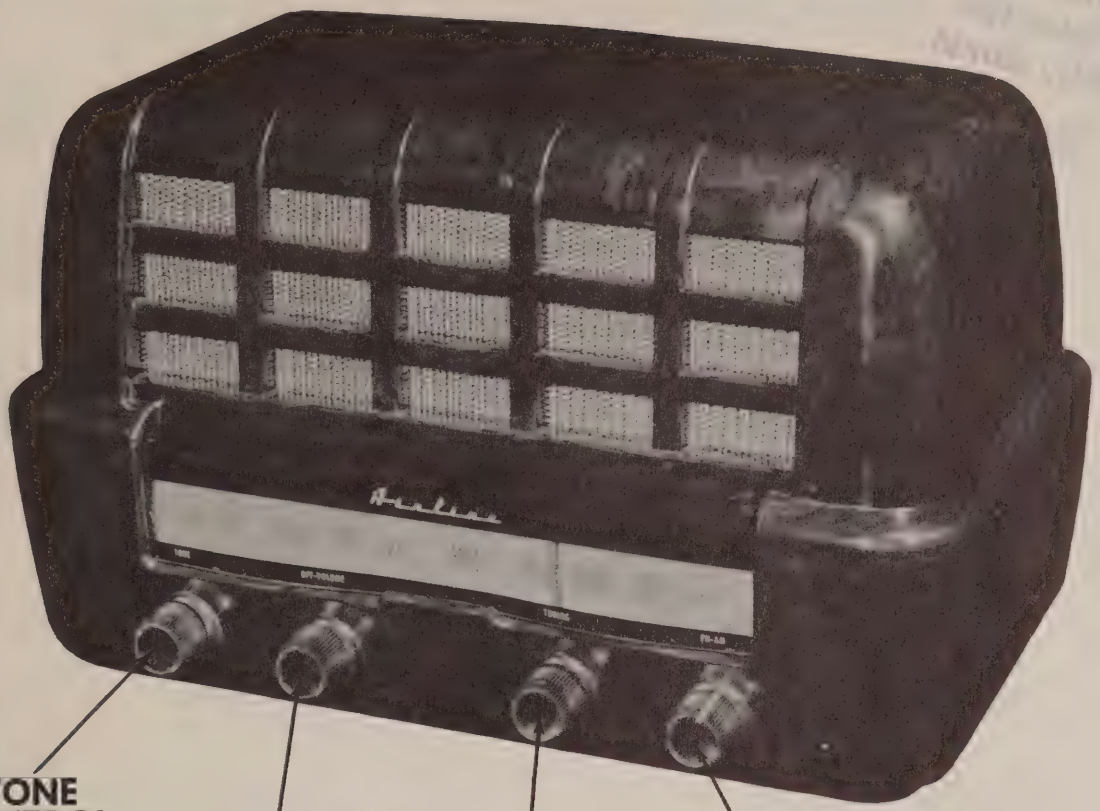


RADIO DRIVE CORD STRINGING



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

AIRLINE
MODEL 25BR-1542A



AIRLINE
MODEL 25BR-1542A

TRADE NAME	Airline Model 25BR-1542A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Four)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50L6GT Audio Output
POWER SUPPLY	110-120 Volts AC/DC — RATING .33 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed, set right hand edge of pointer saddle to last index dot at left end of pointer rail.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 25BR-1542A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp	12AV6	12AV6	7BT	
V4	Audio Output	50L6GT	50L6GT	7S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	60	150	8C-19829	PRS150/50-50		EDL5515		3N540	R1119	Red
B	50	150		PRS150/50-50		EDL5515		TC29		Blue
C	50	150								Yellow
D	40	25								Green
C2	.05	200	8D-10770	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	100		♦201-15005	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		
C4	.02	200	8D-11304	P488-02	DF-203	PTE4S2		PT412	2TM-S5	
C5	220		8G-14459	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C6	.05	200	8D-10770	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.005	600	8D-10935	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C8	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C9	.005	600	8D-10935	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	.09	400	8D-11251							
C11	.047	400	8J-16081	489ZX-05		PJ4147		PT4147	4TM-S47	
C12	.18	400	8D-11111							

♦ Items C3A, C3B, R6 are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	A-10A-19606	Q18-137X	AT-103	ABT-7417		Volume-Tapped @ 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4		Attach to R1A
C	Switch		Not Req.	76-1	SW-A	KB-1		Attach to R1A
R2A	1Meg	½	A-11B-15852	Q13-137	AG-63-Z	BSK-70	U-53	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES	ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRLINE PART No.	IRC PART No.			OHMS	WATT	AIRLINE PART No.	IRC PART No.	
R3	47KΩ	½	9B1-82	BTS-47K		R10	470KΩ	½	9B1-29	BTS-470K	
R4	2.2Meg	½	9B1-33	BTS-2.2Meg		R11	150Ω	½	9B1-52	BTS-150	
R5	150Ω	½	9B1-52	BTS-150		R12A	195Ω	4.5	9M19778		
R6	47KΩ	½	♦201-15005	BTS-47K		B	50Ω	4			
R7	6.8Meg	½	9B1-36	BTS-6.8Meg		R13	150Ω	1	9B2-52	BTA-150	
R8	220KΩ	½	9B1-90	BTS-220K		R14	1200Ω	1	9B2-63	BTA-1200	
R9	33KΩ	½	9B1-80	BTS-33K		R15	220KΩ	½	9B1-90	BTS-22K	

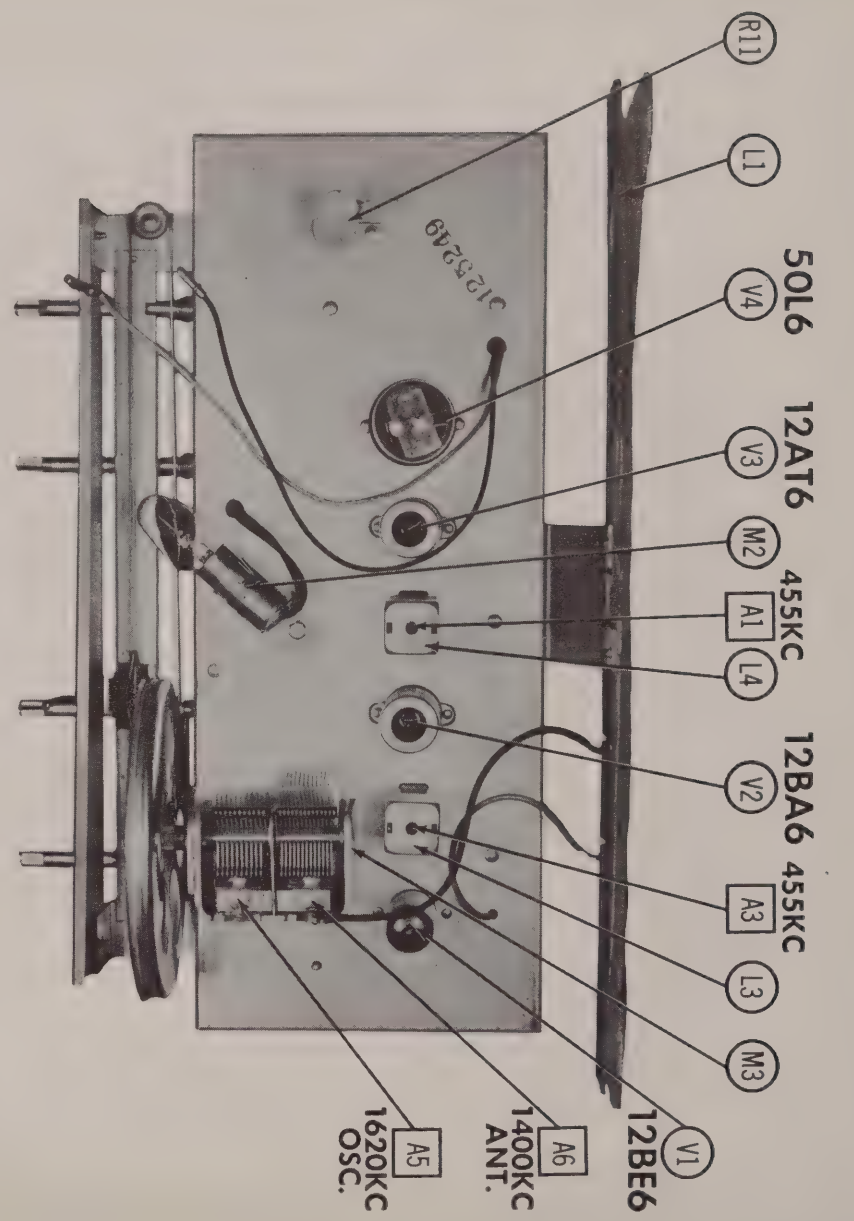
♦ Items R6, C3A, C3B are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.8KΩ	3.6Ω	200Ω	.6Ω	12C-19009-1	A-3876 ①	A-2928 ①	RO-302①	S-1X ①	

① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	VIKING PART No.	QUAM PART No.	
SP1	5 x 7"	PM	3.6Ω	18A18857	57J9	57A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	AIRLINE PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	0Ω	3.6Ω	13E-19830-1			
L2	Osc. Coil	.8Ω	5.6Ω	13D-19064			
L3	Input IF	14.5Ω	14.5Ω	13B-17731	12-C1	16-6758	
L4	Output IF	14.5Ω	14.5Ω	13B-17731	12-C2	16-6758	

SELENIUM RECTIFIER

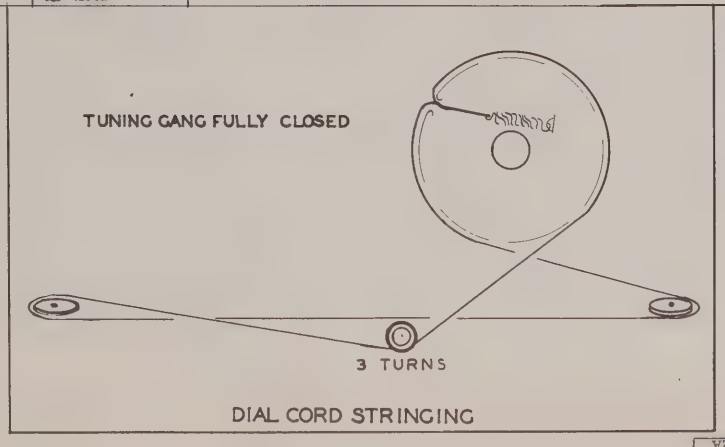
ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	AIRLINE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.058 ADC	21J19594	NC-5	5M4	1002A	6S65	65

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRLINE PART No.		
M2	Bayonet	117 V.	10 Watt		46A-16545		

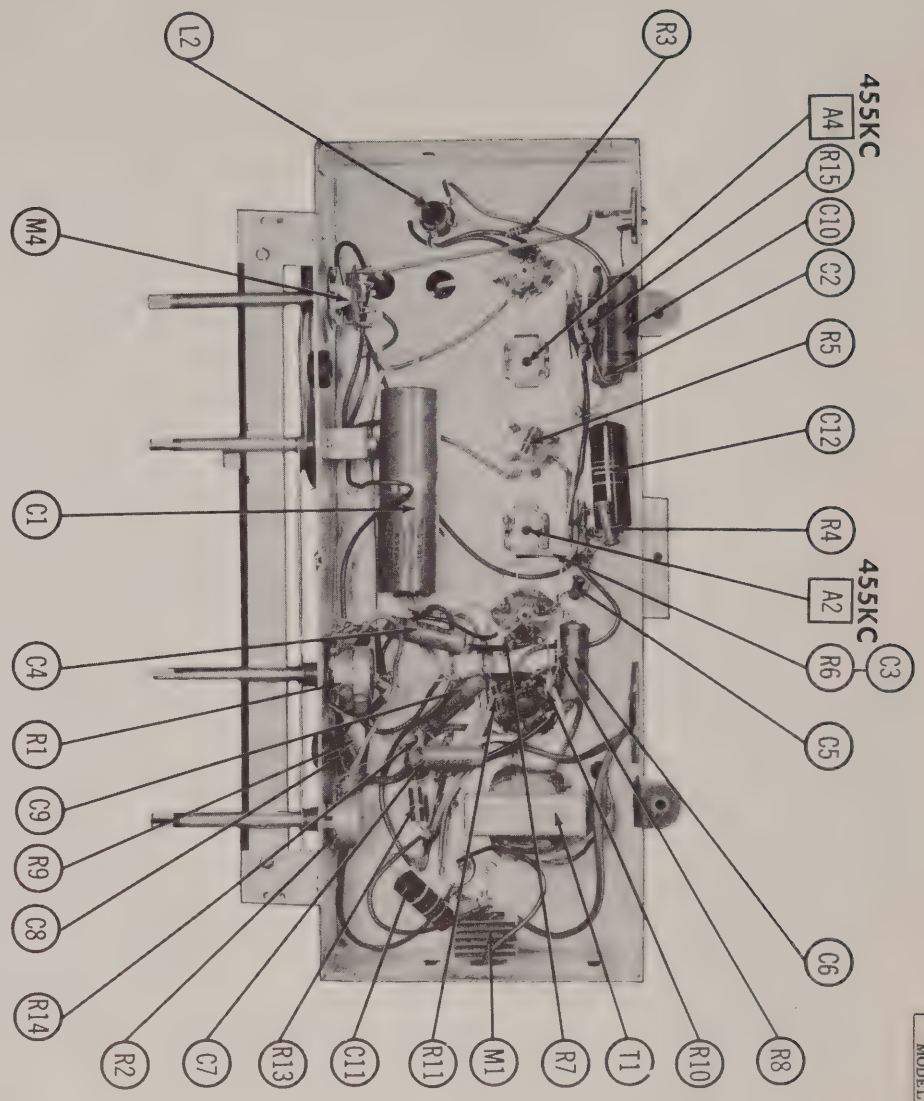
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuning Capacitor	8A18997	2 Gang (42-490MMF, 25-158MMF)
M4	Switch	20A-19660	Radio-Phono
	Cabinet	5C-18396-36	Bakelite
	Knob	5B-21782A74	
	Knob	5B-21783A74	(with indicator)
	Dial Pointer	2G-21803	
	Dial Scale	6D-21862	
	Diffuser	6B-21802	

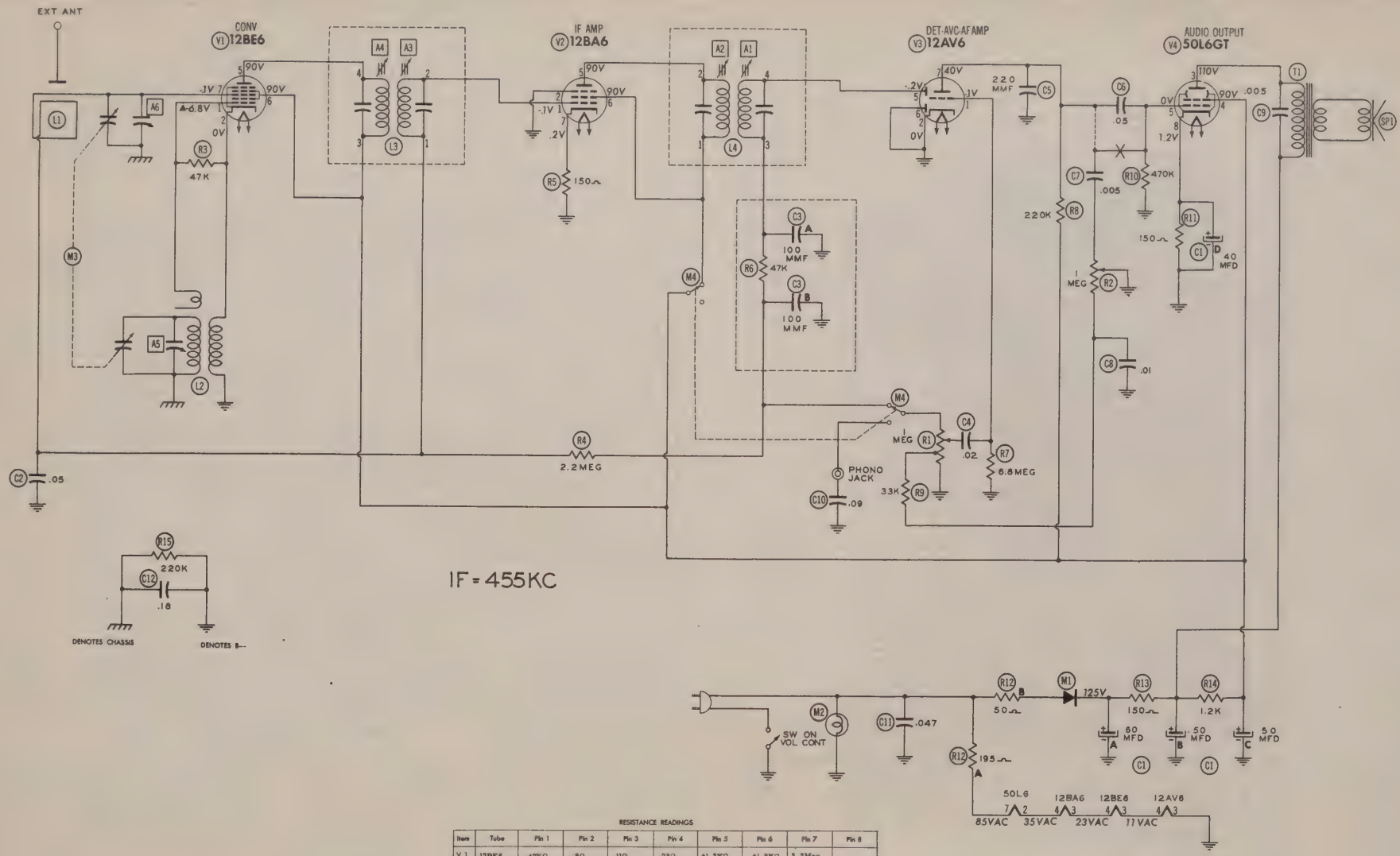


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 25BR-1542A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	47KΩ	.8Ω	1Ω	23Ω	†1.3KΩ	†1.3KΩ	3.3Meg	
V 2	12BA6	3.3Meg	0Ω	23Ω	36Ω	†1.3KΩ	†1.3KΩ	150Ω	
V 3	12AV6	†6.8Meg	0Ω	0Ω	1Ω	1.2Meg	0Ω	†230KΩ	
V 4	50L6GT	INF	36Ω	†350Ω	†1.3KΩ	470KΩ	INF	86Ω	150Ω

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

CAPEHART
MODELS CT-75, CT-77, CT-81 (CX-37 Series)

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MODEL 1C213M

CAPEHART
MODELS CT-75, CT-77, CT-81 (CX-37 Series)

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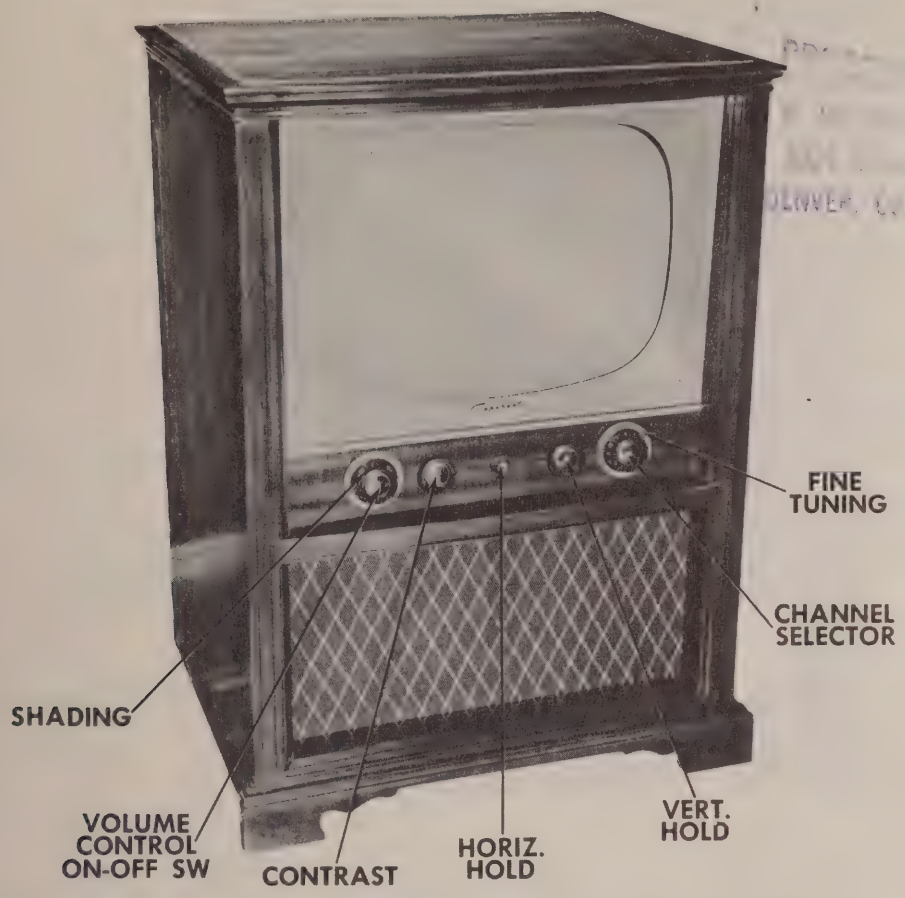
DATE 5-53 SET 203 FOLDER 4

CAPEHART
MODELS CT-75, CT-77, CT-81 (CX-37 Series)



CAPEHART
MODELS CT-75, CT-77, CT-81 (CX-37 Series)

TRADE NAME	Capehart Model 1C213M (Ch. CT-75, CT-77, CT-81) CX-37 Series
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne , Indiana
TYPE SET	Television Receiver
TUBES	Twenty-One
POWER SUPPLY	110-120 Volts AC-Cycle RATING 1.72 Amp. @117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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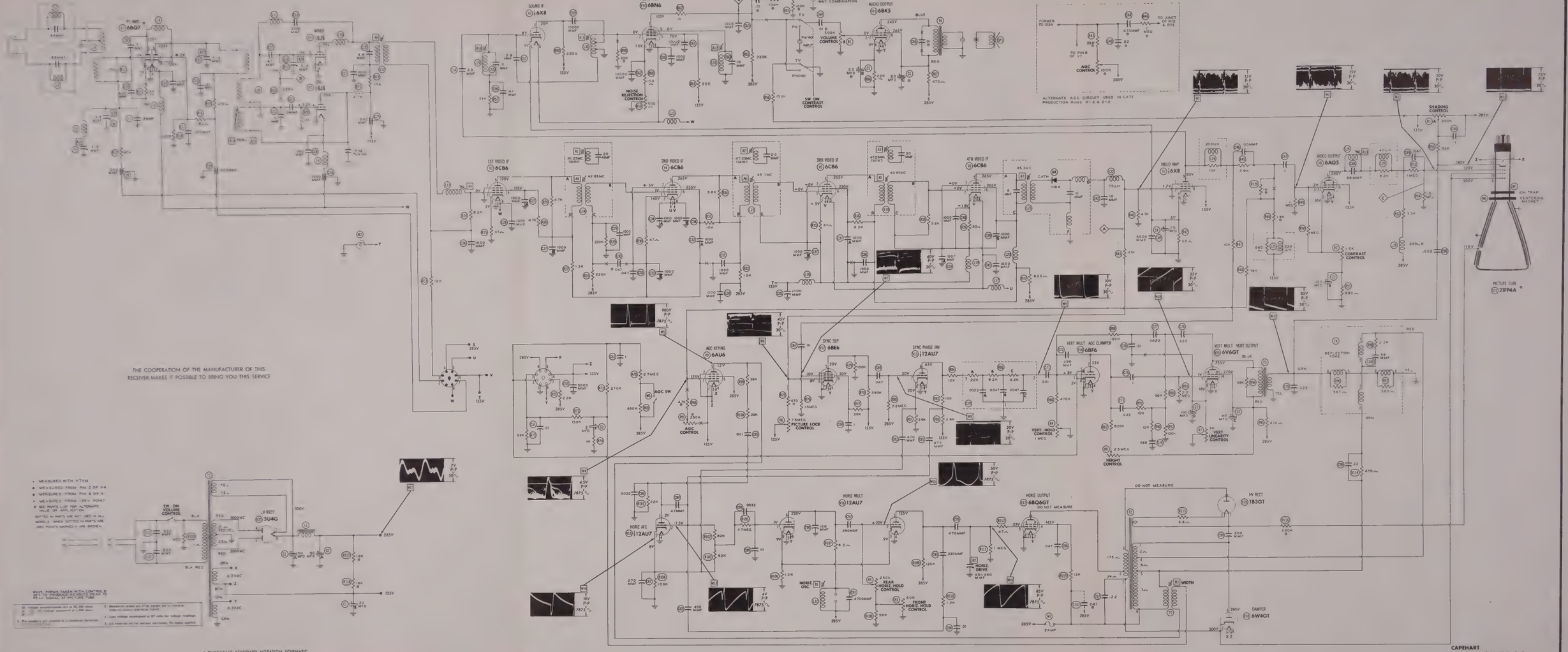
CAPEHART
MODELS CT-75, CT-77, CT-81 (CX-37 Series)
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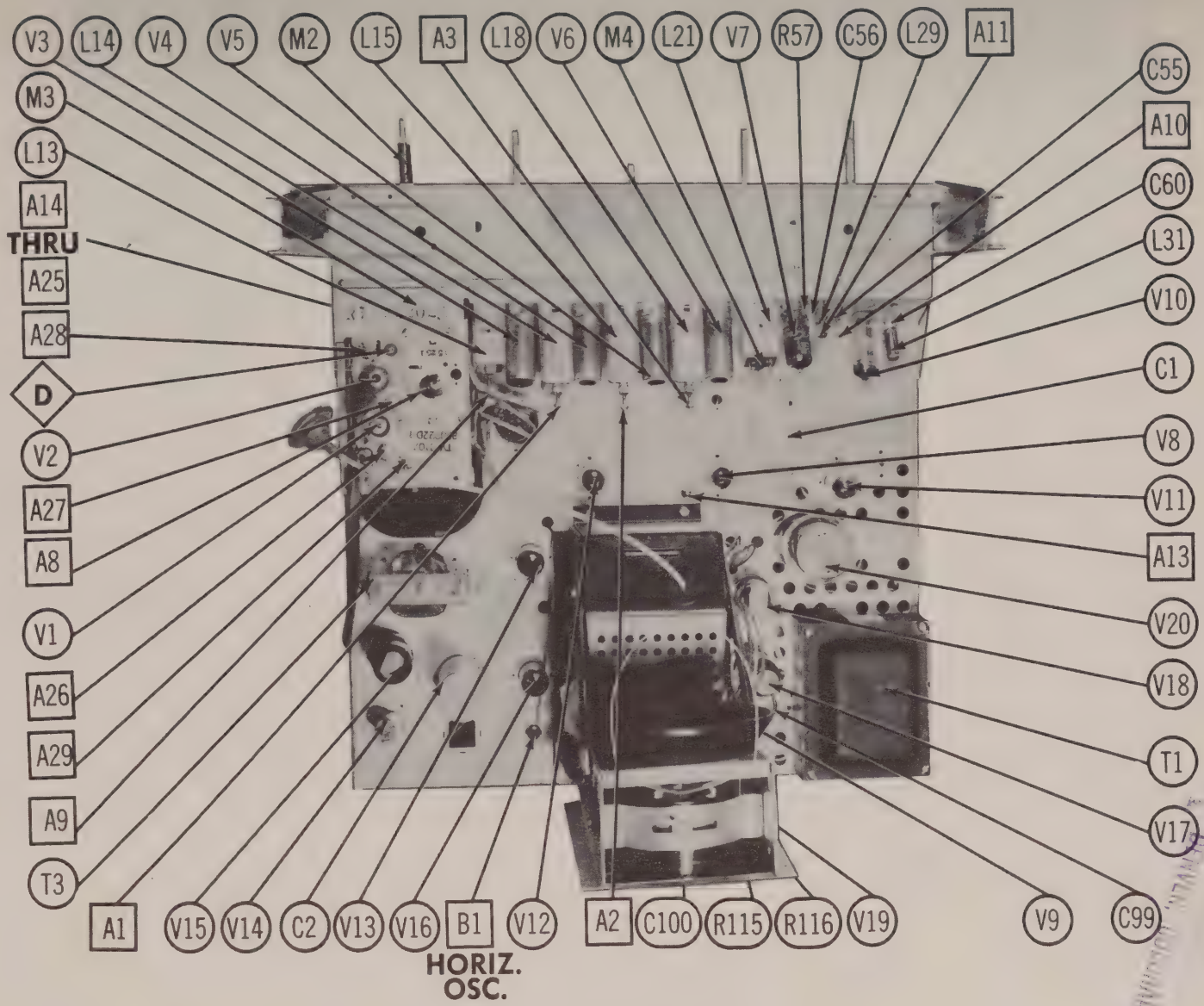
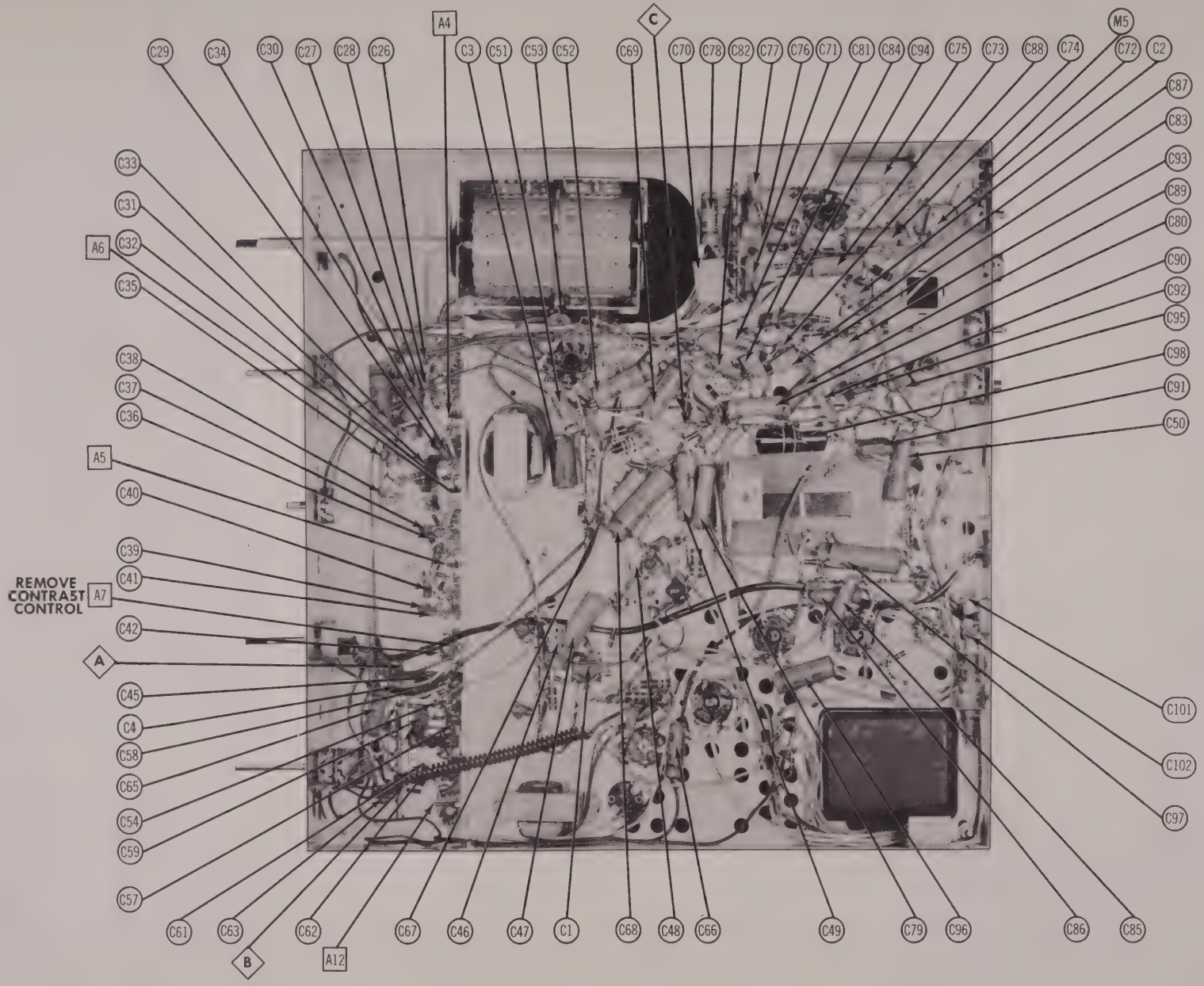
MODELS CT-75, CT-77, CT-81 (CX-37 Series)



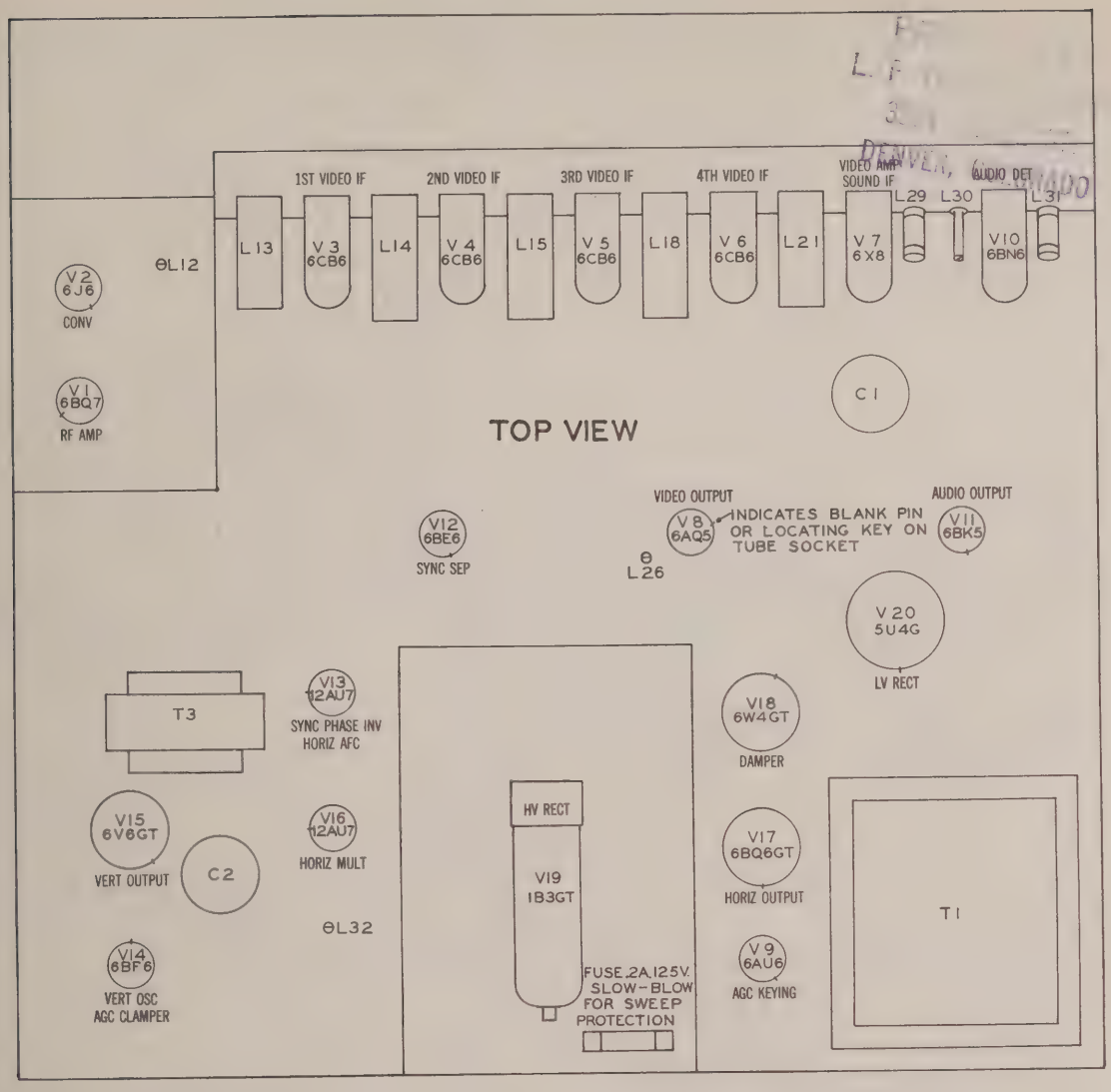
CHASSIS TOP VIEW

PRO...
L. F. B...
3924 ...
DENVER, COLORADO



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V20

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V8, V21
Has pic, no sound-V7, V10, V11
Overloaded picture-V9, V14

SYNC FAILURE
No vert. sync-V13, V14
No horiz. sync. -V13, V16
No vert. or horiz. sync. -V12, V13

SWEEP FAILURE
No raster, has sound-V16, V17, V18, V19, V21 Fuse (M1)
No vertical deflection- V14, V15
Poor vert. linearity or foldover-V14, V15
Poor horiz. linearity or foldover-V16, V17, V18
Narrow picture- V16, V17, V18, V19, V20
Vert. off freq. -V13, V14
Horiz. off freq. -V13, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Remove the AGC amplifier tube, 6AU6 (V9) from its socket.
Connect the negative lead of a 3.8 volt bias source to pin 3 of the RF IF chassis power plug. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	41.25MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	" "	47.25MC	"	" "	A2, A3	" "
3.	"	" "	42.65MC	"	" "	A4, A5	Adjust for Maximum deflection.
4.	"	" "	45.3MC	"	" "	A6, A7	Adjust for Maximum deflection. To obtain access to A7 remove the contrast control from the front panel and insert alignment tool through hole vacated by the control.
5.	Repeat steps 1 and 2						

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	41.25MC 42.25MC 45.0MC 45.75MC 47.25MC	Any	Vert. Amp. to point (A). Low side to chassis.	A8, A9	Adjust for response similar to Fig. 1. If necessary retouch A4 thru A7 for desired response.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (50% AM)	Any	Vert. Amp. thru detector (Fig. 2) to insulated wire (no direct contact) at pin 2 of V7B. Low side to chassis.	A10, A11	Short pin 1 to pin 2 of V4. Adjust in order given for maximum indication on scope, then recheck A10.
8.	"	"	4.5MC (50KC Swp)	4.5MC	"	Vert. Amp. to point (B). Low side to chassis.	A12	Use high generator output to insure limiting action of 6BN6. Adjust A12 for maximum indication at 4.5MC. Remove short from V4.
9.	Connect receiver through variable attenuator to antenna. Tune in a TV signal and adjust attenuator so that background noise is just noticeable at all times during adjustment of noise rejection control. Adjust noise rejection control for minimum background noise and hiss.							
10.	Remove attenuator and, using full strength TV signal, adjust A12 for clearest sound.							

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.01MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (400∿Mod)	Any	Vert. Amp. thru detector (Fig. 2) to point (C). Low side to chassis.	A13	Adjust for MINIMUM 400∿ indication on scope.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Remove the AGC amplifier tube, V9 from its socket.
Short pin 2 of the RF, IF chassis power plug to chassis. Connect the negative lead of a 3 volt battery to pin 3 of power plug. Connect the positive lead to chassis.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A14	Adjust to place sound marker in trap notch as in trap notch as in Fig. 3. Video marker should be at approximately 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt battery to pin 2 of the RF-IF chassis power plug. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point Ⓓ Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 4.
14.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 4. If markers fall below 70% on any channel make compromise adjustments of A26, A27 and A28 with channel switch set to that channel then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

IF TRAP ADJUSTMENT

The IF trap is provided for the purpose of eliminating any interfering signal occuring in the IF pass band. Adjust A29 to minimize any interference of that nature, if noted.

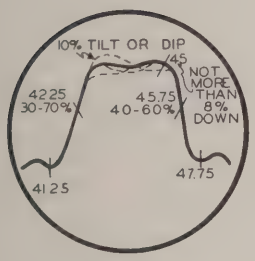


FIG. 1

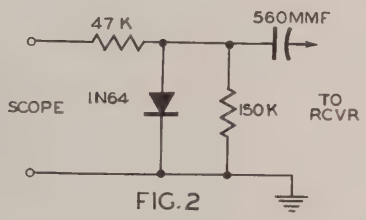


FIG. 2

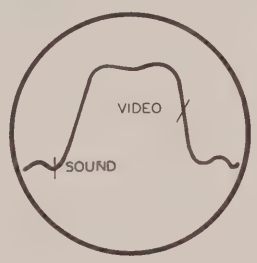


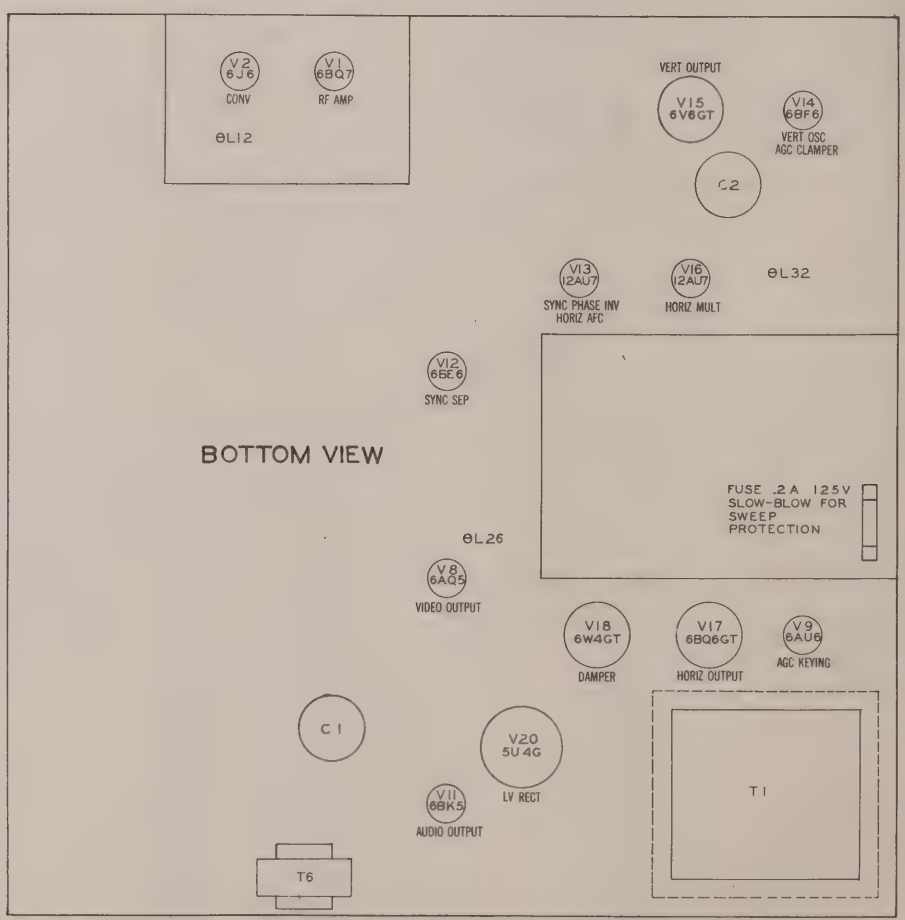
FIG. 3

FIG. 4

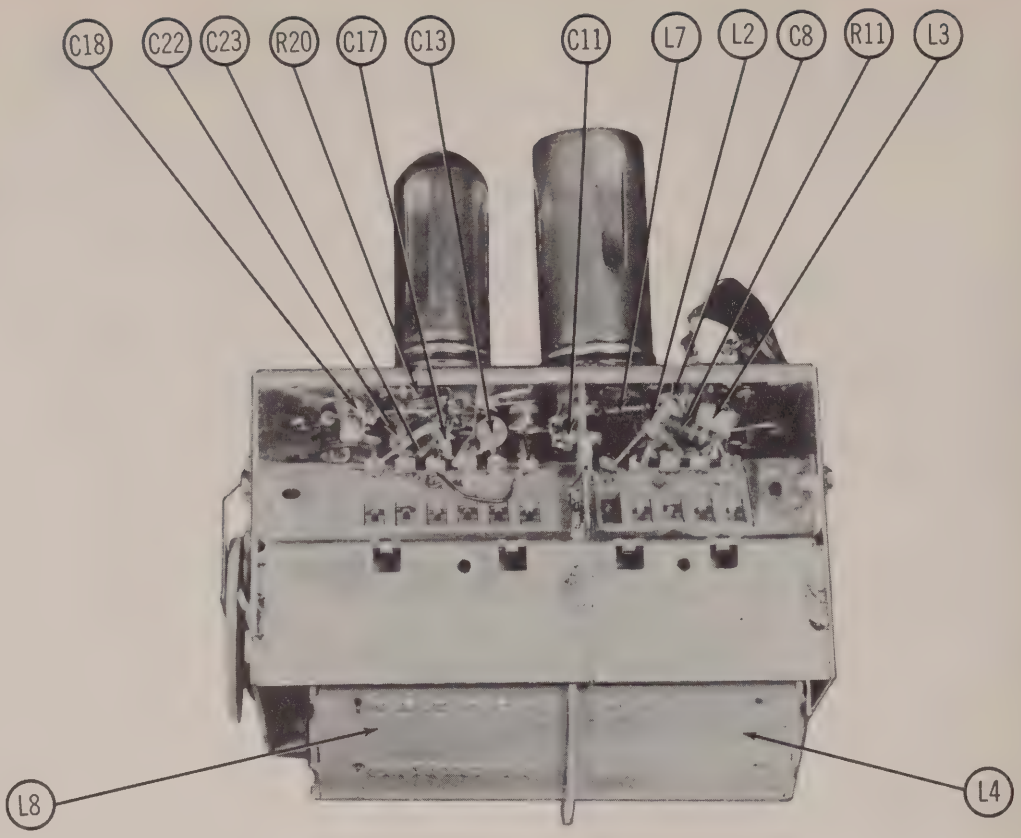
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	80KΩ	33Ω	0Ω	.1Ω	†2.6KΩ	140KΩ	INF	0Ω
V 2	6J6	†41KΩ	†51KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	45KΩ	47Ω	0Ω	.1Ω	INF	INF	0Ω		
V 4	6CB6	†220KΩ	INF	†36KΩ	†36KΩ	†1.5KΩ	†10KΩ	INF		
V 5	6CB6	†36KΩ	†36KΩ	†36KΩ	†36KΩ	†820Ω	†9KΩ	†36KΩ		
V 6	6CB6	†36KΩ	100KΩ	†36KΩ	†36KΩ	†820Ω	†820Ω	†36KΩ		
V 7	6X8	0Ω	56KΩ	†256KΩ	.1Ω	0Ω	68Ω	4.7KΩ	†36KΩ	†42KΩ
V 8	6AQ5	550KΩ	700Ω	0Ω	.1Ω	†3.3KΩ	†36KΩ	550KΩ		
V 9	6AU6	†41.7KΩ	†36KΩ	†36KΩ	†36KΩ	183KΩ	†61Ω	†36KΩ		
V 10	6BN6	500Ω	.5Ω	0Ω	.1Ω	†58KΩ	4.6Ω	†331KΩ		
V 11	6BK5	†1.1KΩ	INF	150Ω	0Ω	.1Ω	220Ω	150Ω	†530Ω	INF
V 12	6BE6	51KΩ	0Ω	0Ω	.1Ω	†130KΩ	†105KΩ	1.5Meg		
V 13	12AU7	22KΩ	264KΩ	100KΩ	0Ω	0Ω	†50KΩ	†2.2Meg	3.9KΩ	.1Ω
V 14	6BF6	620KΩ	0Ω	0Ω	.1Ω	450KΩ	450KΩ	†1.4Meg		
V 15	6V6GT	INF	0Ω	†970KΩ	†530Ω	2.2Meg	†470Ω	.1Ω	750Ω	
V 16	12AU7	†120KΩ	215KΩ	1.2KΩ	0Ω	0Ω	†8.2KΩ	4.9Meg	1.2KΩ	.1Ω
V 17	6BQ6GT	INF	.1Ω	INF	†12KΩ	1 Meg	0Ω	0Ω	0Ω	Top Cap ♦24Ω
V 18	6W4GT	INF	INF	INF	INF	†80Ω	INF	†36KΩ	†36KΩ	
V 19	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ♦199Ω
V 20	5U4G	INF	80KΩ	INF	21.3Ω	INF	23.4Ω	INF	80KΩ	
V 21	21FP4A	†36KΩ	1 Meg	Pin 6 ♦0Ω	Pin 10 ♦0Ω	Pin 11 †140KΩ	Pin 12 †36KΩ			

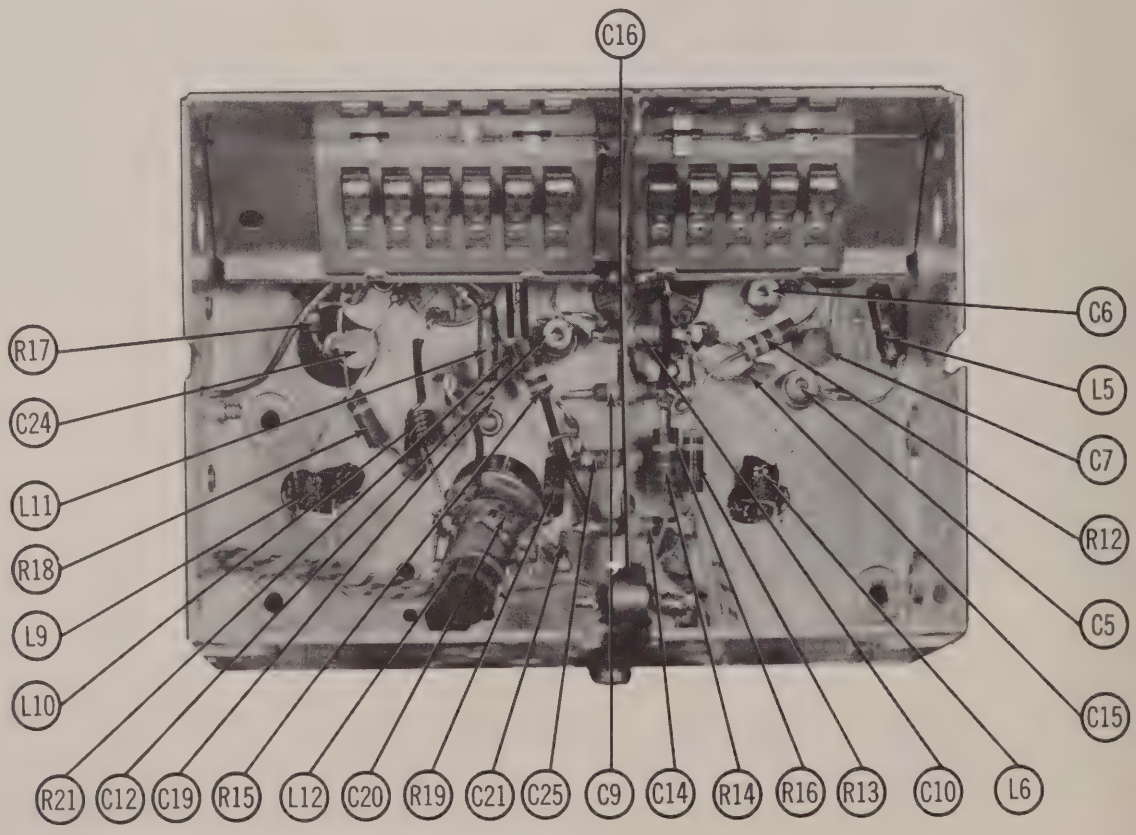
♦ MEASURED FROM PIN 3 OF V18
† MEASURED FROM PIN 2 OF V20.



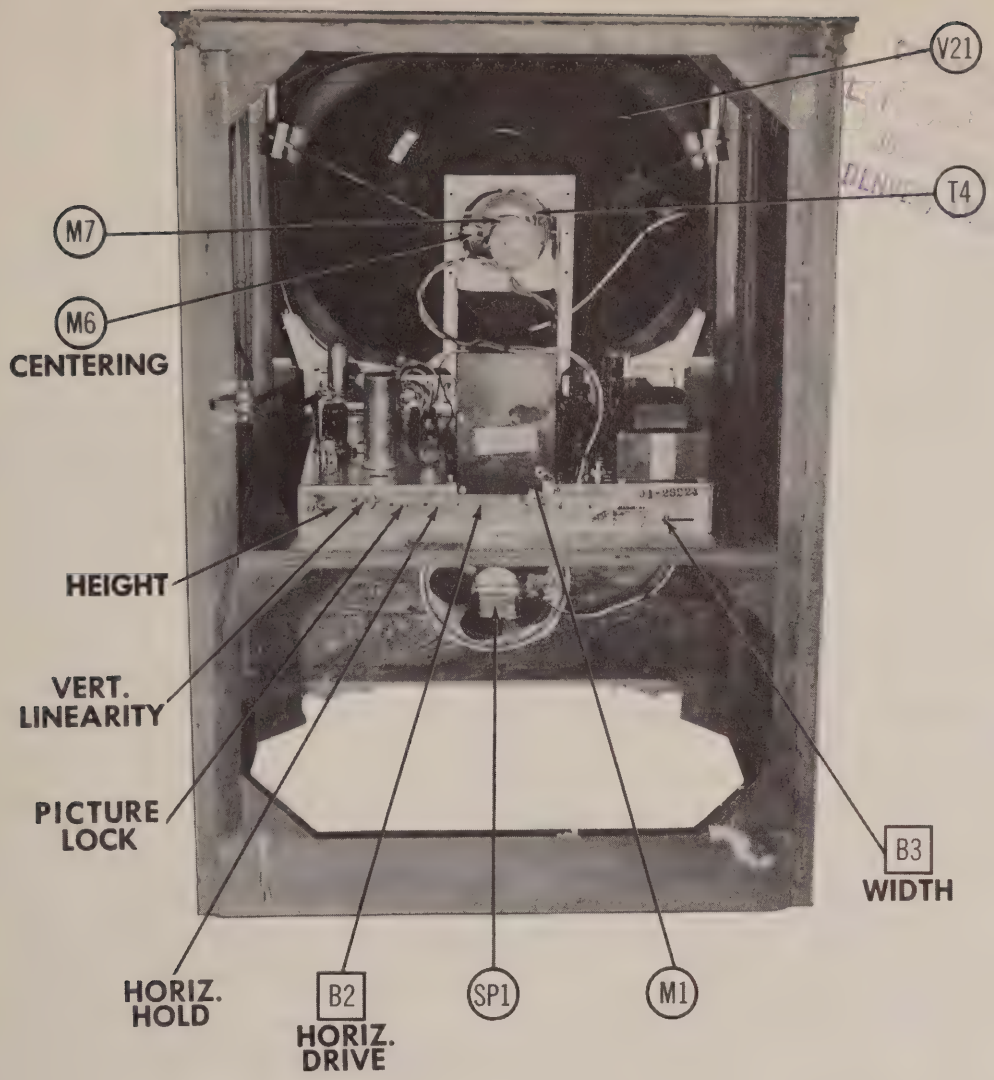
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the front panel horizontal hold control to each extreme of its rotation and note the amount of picture shift. Picture should shift an equal amount from its position when the horizontal hold is at mid-range.

If above results are not obtained, remove the high voltage cover and connect a short across the two terminals on the lug strip in the high voltage compartment, thus shorting out the ringing coil.

Adjust the rear horizontal hold control so that the picture is properly phased when front panel horizontal hold is at center of its range.

Remove the short from the ringing coil.

Adjust the horizontal oscillator slug (B1), so that picture is correctly phased with the front horizontal hold at the center of its range.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

AGC ADJUSTMENT

Connect the vertical input of an oscilloscope to pin 1 (grid) of 6AQ5 (V8). Connect low side to chassis.

Tune in a TV station and set operating controls for normal operation. Adjust the AGC control (on top of chassis between power transformer and high voltage cage) for 12 volts peak to peak indication on scope.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check yoke for open. Check sweep return capacitor C98 and R114 in parallel for open capacitor and burned resistor

INSUFFICIENT SWEEP

Substitute V16, V17 and V18. Check setting of horizontal drive, B2 and width, B3.
Check waveform at W16.

If Satisfactory	If Unsatisfactory
Check C96, R113, T2 and other components of the horizontal output stage. Check C97 and other components of the damper stage.	Check horizontal oscillator circuit. Check coupling network consisting of C93 and C112 in series. Paralleled by C94, C95 and horiz. drive control, B2.

DRIVE LINES

Substitute V17 and V18. Check setting of drive control, B2 and width, B3.
Check horizontal damper circuit.

COMPRESSED AT LEFT SIDE

Substitute V17 and V18. Check T2, width coil and other components associated with horizontal output stage. Check yoke.

FOLDS

Substitute V17 and V18. Check damper filter network for open capacitors.
Check T2. Check yoke.

XMAS TREE EFFECT

Check C91 for short. Check L32 for open.

VERTICAL

LOSS OF SWEEP

Substitute V14 and V15.
Check waveform at W10.

If Satisfactory	If Unsatisfactory
Check T3, yoke, R95, C2C and C79.	Check C75, C72 and other components associated with V14.

INSUFFICIENT SWEEP

Substitute V14 and V15.
Check waveform at W10.

If Satisfactory	If Unsatisfactory
Check C2D, T3, C79, C2C and R95.	Check C75, C73, C76, C77 and other components associated with V14.

COMPRESSED AT BOTTOM, STRETCHED AT TOP (Fig. 1)

Check C73 for open.

FOLDS

Substitute V14 and V15. Check T3 and yoke.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V12, V13 and V16.
Check C81 and C82. Check other components associated with V13. Check horizontal oscillator components and coupling network between V13B and V13.

CRITICAL HOLD

Substitute V12, V13 and V16.
Follow procedure under "Loss of Horizonal Sync".

PULLING PICTURE

Substitute V13 and V16. Check coupling network between V13 and V16.
Check V16 circuit components.

TEARING AT TOP OF PICTURE (Fig. 2)

Check C91 for open.

VERTICAL

LOSS OF SYNC

Check by substitution V12, V13, V14 and V15.
Check waveform at W9.

If Unsatisfactory	If Satisfactory
Check components of V12 and V13A. Check integrating network.	Check components of V14 and V15, particularly feedback network and C74.

CRITICAL HOLD

Substitute V13 and V14. Check integrating network and C71.

TRIGGERING

Check V14 and V15. Check filament lead dressing near grid lead of V14.

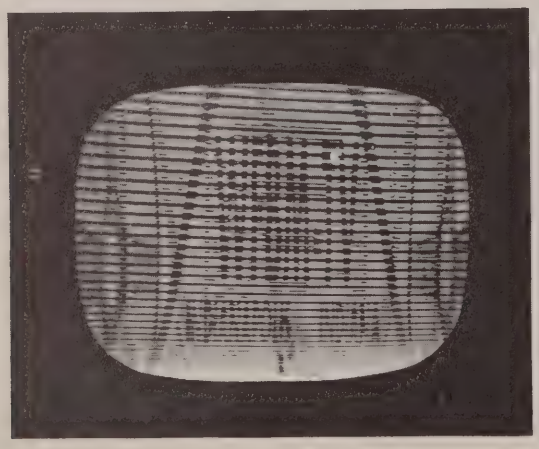


Fig. 1

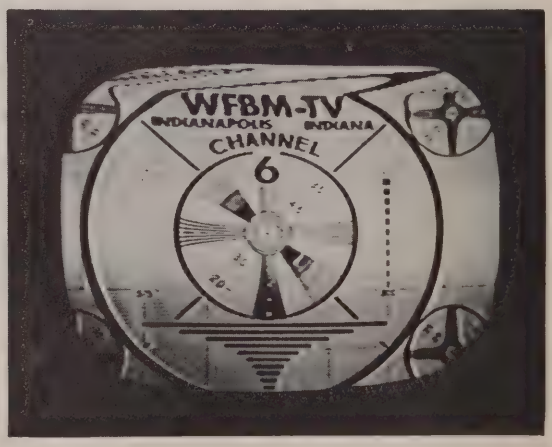


Fig. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Amplifier-Sound IF Amp.	6X8	6X8	7BZ	
V8	Video Output	6AQ5	6AQ5	7BK	
V9	AGC Keying	6AU6	6AU6	7DF	
V10	Audio Detector	6BN6	6BN6	7CH	
V11	Audio Output	6BK5	6BK5	9A	
V12	Sync Separator	6BE6	6BE6	7BT	
V13	Sync Phase Inv.-Horiz. AFC	12AU7	12AU7	7S	
V14	Vert. Oscillator-AGC Clamper	6BF6	6BF6	9A	
V15	Vert. Output	6V6GT	6V6GT	6AM	
V16	Horiz. Mult.	12AU7	12AU7	4CG	
V17	Horiz. Output	6BQ6GT	6BQ6GT	3C	
V18	Damper	6W4GT	6W4GT	5T	
V19	HV Rectifier	1B3GT	1B3GT		
V20	LV Rectifier	5U4G	5U4G		

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V21A	21FP4A	21FP4A		12C	① Circuit changes necessary
		21FP4	①	12C	
B	17LP4	17LP4		12C	
		17VP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	400	750090B-39	AFH4-76		DO82		FP430.2	R1305	
B	▲20	350						TC72		Note 1
C	■20	400								Note 1
D	25	25								
C2A	▲50	400	750090B-38	AFH4-87		DO66		FP426.9	R1304	
B	100	25		PRS25/100		BRH251A		TC72		
C	■40	400								
D	▲100	50								
C3	2	150	650228A-11	PRS150/4		BR215		TC40	TVA-1402	
C4	25	25	650228A-7	PRS25/25		BR252A		TC26	TVA-1205	
C5	3-8				829-10					
C6	3-8				829-10					
C7	3			SI3NP0			NP0K-030	ZT-553		
C8	3			SI3NP0			NP0K-030	ZT-553		
C9	1000									
C10	1000									
C11	1000							CT565A		
C12	.5-3				829-3			UC-5312	5GA-T12	
C13	120		451064A-1	BPD-00012	D6-121	TM5T12	GP2K-121	DC-521	5HK-D1	
C14	1000									
C15	1000			BPD-001	DD-102	TM5D1	801-001			
C16	1000									
C17	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C18	.5-3				829-3			CT565A		
C19	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C21	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	5		451215A-1	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C23	10		451063A-1	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C24	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	1000									
C26	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27A	1000		600881A-9	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C28	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	.047	600	2248-4730	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	Note 2
C31	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32A	1000		600881A-9	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C33	.047	600	2248-4730	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C34A	1000		600881A-9	BPD-2X001	DD-2-102	TM5DD1	821-001	DCD-521	5HK-2D1	
B	1000									
C35	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C36	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C37A	1000		600881A-9	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C38	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39A	1000		600881A-9	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C40	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C41	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C42	10		650030A-16							
C43	.22	400	2247-2240	P488-22		PTE4P22		PT4025	4TM-P22	Note 2

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C44	470	500	2372-21471	1467-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	Note 2
C45	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C46	100	500	2372-21101	1469-0001	TCZ-100	5R5T1	NP0-333-101	MCB235	MS-31	
C47	.1	600	2248-1040	P288-1	DF-104	PTE6P1		PT601	6TM-P1	
C48	68		650030A-15				N150L-680			
C49	.047	600	2248-4730	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C50	.1	200	2246-1040	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C51	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C52	.1	200	2246-1040	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C53	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C54	3.3		650030A-5	S13.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C55	10		650030A-16				N150K-100			
C56	47		650030A-17	SI47N750	TCN-47			NT-5447	5TCU-Q47	
C57	3.9						NP0K-3R9			
C58	1000		450469A-5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C59	10000		600681A-8	BPD-01	DD-103	TM5I1	811-01	DC-511	5HK-S1	
C60	10		650030A-16				N330K-100			
C61	10000		600681A-8	BPD-01	DD-103	TM5I1	811-01	DC-511	5HK-S1	
C62	10000		600681A-8	BPD-01	DD-103	TM5I1	811-01	DC-511	5HK-S1	
C63	1000		450469A-7	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C64	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
C65	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 1
C66	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 1
C67	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C68	.1	600	2248-1040	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C69	.047	600	2248-4730	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C70A	.0022			P688-0022		PTE6D22		PT6222		
B	.0047		♦ 650596C-1	P688-0047	♦PC-100	PTE6D47	♦1405-01	PT6247	♦101C1	
C	.0047			P688-0047		PTE6D47		PT6247		
C71	.001	600	2248-1020	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C72	390	500	2272-21391	1469-0004		5R5T4			MS-34	
C73	.033	600	2248-3339							
C74	.068	200	2246-6839							
C75	.1	600	2248-1040	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C76	.022	600	2248-2230	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C77	.0022	1000	2249-2220							
C78	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C79	.022	600	2248-2230	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C80	.022	600	2248-2230	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C81	470	500	2272-21471	1469-0005		5R5T5		MCB246	MS-35	
C82	470	500	2272-21471	1469-0005		5R5T5		MCB245	MS-35	
C83	470	500	2272-21471	1469-0005		5R5T5		MCB245	MS-35	
C84	47	500	2272-21470	1469-00005		5R5Q5		MCB225	MS-45	
C85	.001	600	2248-1020	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C86	.0022	600	2248-2220	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C87	270	500	2272-21271	1469-0003		5R5T3		MCB241	MS-33	
C88	.0033	600	2248-3320	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C89	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C90	100	500	2272-21101	1469-0001	TCZ-100	5R5T1	NP0-333-101	MCB235	MS-31	
C91	4700	500	2272-43472	1464-005		LDR5D5		MCB465	MS-25	
C92	390	500	2272-23391	1469-0004		5R5T4		MCB243	MS-34	
C93	330	500	2272-21331	1469-00035						
C94	.01	200	2246-1030	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C95	470	500	2272-21471	1469-0005		5R5T5		MCB245	MS-35	
C96	.047	600	2248-4730	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C97	.22	400	2247-2240	P488-22		PTE4P22		PT4025	4TM-P22	
C98	.22	400	2247-2240	P488-22		PTE4P22		PT4025	4TM-P22	
C99	500	20000	650153B-3	HV20C	TV3-502	MM-C20T5			20DK-T5	
C100	56	2000							20GA-Q56	
C101	1500		450469A-2	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5GA-D15	
C102	1500		450469A-2	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5GA-D15	
C103	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	Note 4

Note 1. Not used in combination modes.
Note 2. Not used in earlier production.
Note 3. Used only in combination modes.
Note 4. Used only in earlier production.
♦ Items C70A, C70B, C70C, R85A, R85B, R85C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200KΩ		453337A-1	QJ-446**			UF254L	Shading-Panel
B	500KΩ						UR55A	Volume-Rear
C	Switch						US-26	Attach to R1B
R2	1500Ω		650641B-1					Contrast & TV-Phono Switch
R3A	50KΩ		650639B-1	Q11-123	AG-44-S	AB-31	U-35	Front Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	1 Meg		453115B-1	Q11-137	AG-61-S	B-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	250KΩ with 50KΩ stop		453332C-1	Q11-129*	AG-55-S*	AB-50*	SU-46*	Rear Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	7.5Meg		453333A-1	Q11-142	AM-86	AB-98	U-82	Picture Lock
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7	3000Ω with 700Ω stop	1	650642A-3					Vert. Linearity-Wire Wound
R8A	2.5Meg		452732A-1	Q11-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	250KΩ		650653A-1	Q11-130	AG-55-S	AB-50	SU-46	AGC-Note
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R9A
R10	500Ω	1	650642A-2					Noise Rejection-Wire Wound

* Connect a 47KΩ resistor in series with center terminal.
Note. Late production models use a 100KΩ control (Part No. 650653B-1).
** CONCENTRIKET EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-129 & P1-118 (Panel) B13-133 & R2-204 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA CAPEHART PART No.	IRC PART No.	NOTES
R11	15KΩ	½	3229-153	BTS-15K	
R12	47KΩ	½	3229-473		
R13	33Ω	½	3229-330		
R14	220KΩ	½	3229-224		
R15	470Ω	½	3229-471	BTS-470	
R16	180KΩ	½	3229-184		
R17	15KΩ	½	3229-153	BTS-15K	
R18	220KΩ	½	3229-224		
R19	15KΩ	½	3229-153	BTS-15K	
R20	10KΩ	½	3229-103	BTS-10K	
R21	4700Ω	½	3229-472	BTS-4700	
R22	2200Ω	2	3235-222	BTB-2200	
R23	12KΩ	½	3229-123	BTS-12K	
R24	8200Ω	½	3229-822	BTS-8200	
R25	470	½	3229-470		
R26	4700Ω	½	3229-472	BTS-470	
R27	1200Ω	½	3229-122	BTS-1200	
R28	4700Ω	½	3229-472	BTS-4700	
R29	220KΩ-5%	½	3228-224		
R30	47Ω	½	3229-470		
R31	10KΩ	½	3229-103		
R32	1500Ω	½	3229-152	BTS-1500	
R33	220KΩ-5%	½	3228-224		
R34	5600Ω	½	3229-562		
R35	47Ω	½	3229-470		
R36	8200Ω	½	3229-822	BTS-8200	
R37	820Ω	1	3232-821	BTA-820	
R38	5600Ω	½	3229-562		
R39	150Ω	½	3229-151	BTS-150	
R40	4700Ω	½	3229-472	BTS-4700	
R41	47KΩ	½	3229-473	BTS-47K	
R42	68Ω	½	3229-680		
R43	33KΩ	½	3229-333	BTS-33K	Note 2
R44	1 Meg	½	3229-105	BTS-1 Meg	Note 2
R45	3900Ω	1	3232-392	BTA-3900	
R46	1800Ω	1	3232-182	BTA-1800	Note 1
R47	10KΩ	½	3229-103	BTS-10K	
R48	39KΩ	½	3229-393	BTS-39K	
R49	1 Meg	½	3229-105	BTS-1 Meg	
R50	1 Meg	½	3229-105	BTS-1 Meg	
R51	680Ω	1	3232-681	BTA-680	
R52	3300Ω	2	3235-332	BTB-3300	
R53	1 Meg	½	3229-105	BTS-1 Meg	
R54	1.5Meg	½	3229-155	BTS-1.5Meg	
R55	33KΩ	½	3229-333	BTS-33K	
R56	150KΩ	½	3229-154	BTS-150K	
R57	56KΩ	½	3229-563		
R58	220KΩ	½	3229-224		
R59	33KΩ	½	3229-333	BTS-33K	Note 7
R60	150Ω	½	3229-151	BTS-150	
R61	22KΩ	1	3232-223	BTA-22K	
R62	1000Ω	½	3229-102	BTS-1000	
R63	330KΩ	½	3229-334	BTS-330K	
R64	100KΩ	½	3229-104	BTS-100K	Note 3-4
R65	100KΩ	½	3229-104	BTS-100K	Note 3
R66	220Ω	1	3232-221	BTA-220	
R67	470Ω	½	3232-471	BTA-470	
R68	4700Ω	½	3229-472	BTS-4700	Note 7
R69	680KΩ	½	322 9-684	BTS-680K	
R70	2.7Meg	½	3229-275	BTS-2.7Meg	
R71	270KΩ-5%	½	3228-274	BTS-270K-5%	
R72	150KΩ-5%	½	3228-154	BTS-150K-5%	
R73	33KΩ	½	3229-333	BTS-33K	
R74	1000Ω	½	3229-102	BTS-1000	
R75	470KΩ	½	3229-474	BTS-470K	
R76	1.5Meg	½	3229-155	BTS-1.5Meg	
R77	39KΩ	1	3232-393	BTA-39K	
R78	390KΩ	½	3229-394	BTS-390K	
R79	100KΩ	1	3232-104	BTA-100K	
R80	2.2Meg	½	3229-225	BTS-2.2Meg	
R81	3900Ω	½	3229-392	BTS-3900	
R82	10KΩ	½	3229-103	BTS-10K	
R83	3900Ω	½	3229-392	BTS-3900	
R84	12KΩ	½	3229-123	BTS-12K	
R85A	22KΩ	½		BTS-22K	
B	8200Ω	½	♦650596C-1	BTS-8200	
C	8200Ω	½		BTS-8200	
R86	470KΩ	1	3232-474	BTA-470K	
R87	820KΩ	½	3229-824	BTS-820K	
R88	100KΩ	½	3229-104	BTS-100K	
R89	56KΩ	½	3229-563	BTS-56K	
R90	12KΩ	½	3229-123	BTS-12K	
R91	10KΩ	½	3229-103	BTS-10K	
R92	120KΩ	½	3229-124	BTS-120K	
R93	2.2Meg	½	3229-224	BTS-2.2Meg	
R94	56KΩ	1	3232-563	BTA-56K	
R95	470Ω	½	3229-471	BTS-470	
R96	560Ω	½		BTS-560	
R97	560Ω	½		BTS-560	
R98	2200Ω	½		BTS-2200	
R99	39KΩ	½	3229-393	BTS-39K	
R100	39KΩ	½	3229-393	BTS-39K	
R101	22KΩ	½	3229-223	BTS-22K	
R102	82KΩ	½	3229-823	BTS-82K	
R103	82KΩ	½	3229-823	BTS-82K	
R104	100KΩ	½	3229-104	BTS-100K	
R105	4.7Meg	½	3229-475	BTS-4.7Meg	
R106	1200Ω	½	3229-122	BTS-1200	
R107	8200Ω	1	3232-822	BTA-8200	
R108	56KΩ	½	3229-563	BTS-56K	
R109	120K	½	3229-124	BTS-120	
R110	1200Ω	½	3229-122	BTS-1200	
R111	1 Meg	½	3229-105	BTS-1 Meg	
R112	47Ω	½	3229-470	BTS	
R113	12KΩ	2	3235-123	BTB-12K	
R114	470Ω	½	3229-471	BTS-470	
R115	6.8Ω	½	650101A-22		
R116	330KΩ	½	3229-334		Note 5
R117	18KΩ	1	3232-183	BTA-18K	Note 6
R118	18KΩ	½	3232-183	BTA-18K	Note 6
R119	1 Meg	½	3229-105	BTS-1 Meg	
R120	1000Ω	½	3229-102	BTS-1000	Note 2

Note 1. Late production models use a 280Ω resistor in this application.
Note 2. Not used in early production models.
Note 3. Used only in combination models.
Note 4. Early production models use a 470KΩ resistor in this application.
Note 5. Late production models use a 1 Meg (1 Watt) resistor this application.
Note 6. Some models use a single 33KΩ (2 Watt) resistor in this application.
Note 7. Not used in all models.
♦ Items R85A, R85B, R85C, C70A, C70B, C70C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @ 1.72A	625VCT .220ADC	5VAC @ 3A	6.3VAC @ 3A SEC. 4	750395B-1	P-8166① ②				
				6.3VAC @ 6.5A						

① Drill new mounting holes.
② Parallel the two 6.3VAC 5A windings and use as Sec. 4.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	199Ω tap @ 24Ω	10.7Ω tap @ .7Ω, 8.7Ω SEC. 2 0Ω	850220D-1 850220B-1 ③						Horiz. Output Trans.
T3	440Ω	15Ω	750354B-1	A-8115 ① DY-9 ②	A-3038 MDF-70 ②	TSO-5 TY-3 ④	A-99X Y-17 ②	2047T2 ① 21JD1 ②	Vert. Output Trans. Horiz. Deflection Coils Vert. Deflection Coils Width & AGC Coil
T4A	29Ω		850221B-1						
B	43Ω								
T5	.8Ω	94Ω	650589B-1						

① Drill new mounting holes.
② Use original deflection coil network
③ Alternate Horiz. Output Trans.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	8KΩ	3.4Ω	670Ω	.63Ω	650216A-1	A-3856 ①	A-2932 ①	RO-301 ①	S-8X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA CAPEHART PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3.4Ω	750151A-3	ST-115 Mod. P8-V	8A21	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.220ADC	61Ω	1.14 Hy.	650215A-2	C-2326 ①	C-2996 ①	TR-1733 ①	C-23X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CAPEHART PART No.	MILLER PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	IF Trap	0Ω		451330A-1				Wound on 68MMF Capacitor
L3	IF Trap	0Ω		451331A-1				Wound on 56MMF Capacitor
L4A	Ant. Coil	0Ω CT	0Ω	451324A-2				Channel 2
B	Ant. Coil	0Ω CT	0Ω	451324A-3				Channel 3
C	Ant. Coil	0Ω CT	0Ω	451324A-4				Channel 4
D	Ant. Coil	0Ω CT	0Ω	451324A-5				Channel 5
E	Ant. Coil	0Ω CT	0Ω	451324A-6				Channel 6
F	Ant. Coil	0Ω CT	0Ω	451324A-7				Channel 7
G	Ant. Coil	0Ω CT	0Ω	451324A-8				Channel 8
H	Ant. Coil	0Ω CT	0Ω	451324A-9				Channel 9
I	Ant. Coil	0Ω CT	0Ω	451324A-10				Channel 10
J	Ant. Coil	0Ω CT	0Ω	451324A-11				Channel 11
K	Ant. Coil	0Ω CT	0Ω	451324A-12				Channel 12
L	Ant. Coil	0Ω CT	0Ω	451324A-13				Channel 13
L5	IF Trap	0Ω		451332A-1				
L6	Fil. Choke	0Ω		451306A-1				
L7	Neutr. Coil	0Ω		451329A-1				
L8A	RF, Mixer Gric, & Osc. Coil	0Ω		451325A-2				Channel 2
B	RF, Mixer Grid, & Osc. Coil	0Ω		451325A-3				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		451325A-4				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		451325A-5				Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		451325A-6				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		451325A-7				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		451325A-8				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		451325A-9				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		451325A-10				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		451325A-11				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		451325A-12				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		451325A-13				Channel 13
L9	Fil. Choke	0Ω		451307A-1				
L10	RF Choke	0Ω						
L11	Feedback Coil	1.4Ω		451328A-1				
L12	Conv. Plate	0Ω	0Ω	451327A-1				
L13	1st. Video IF	.2Ω		650590B-1				
L14	2nd. Video IF	.2Ω	.2Ω	750349B-1				Includes Trap
L15	3rd. Video IF	.2Ω	.2Ω	750349B-1				Includes Trap
L16	RF Choke	1.8Ω		450338A-4	4606		CLA	2.2 Microhenries
L17	Fil. Choke	0Ω		452667B-1	6175	19-3001		.8 Microhenry
L18	4th. Video IF	.2Ω	.2Ω	750349B-1				Includes trap
L19	RF Choke	1.8Ω		450338A-4	4606		CLA	2.2 Microhenries
L20	RF Choke	1.8Ω		450338A-4	4606		CLA	2.2 Microhenries
L21	5th. Video IF	.2Ω	.2Ω	750350B-1				Includes 1N64 Crystial detector, 10MMF capacitor, 36Microhenries Peaking Coil, & 4 Microhenries RF Choke
L22	Series Peaking Coil	3.6Ω		650585A-1	6172	19-3075		75 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CAPEHART PART No.	REPLACEMENT DATA MILLER PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L23	Fil. Choke	0Ω		452667B-1	6175	19-3001		.8 Microhenry
L24	Series Peaking Coil	6.7Ω		650219A-8	6180 *	19-4200		200 Microhenries, wound on 10KΩ resistor
L25	Shunt Peaking Coil	7Ω		650219A-9	4646 ■	19-3250 ■		220 Microhenries, wound on 680Ω resistor
L26	4.5MC Trap	2.4Ω		65059IA-2	1470	20-1004		
L27	Series Peaking Coil	5.5Ω		650219A-10	4644 †	19-3125 †		140 Microhenries, wound on 8.2KΩ resistor
L28	Shunt Peaking Coil	8.2Ω		650220A-5		19-1922		300 Microhenries
L29	1st. Sound IF	4Ω		65059IA-3	1470	20-1005		
L30	2nd. Sound IF	4.4Ω		650638B-1		17-3412		Tapped @ .5Ω & 1.6Ω
L31	Quadrature Coil	4.6Ω		650640A-1		20-1005		
L32	Horiz. Osc.	52Ω		650637B-1	6210	19-1576		

* Parallel with 10KΩ resistor
■ Parallel with 680Ω resistor
† Parallel with 8.2KΩ resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA CAPEHART PART No. FUSE	CAPEHART PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE *	BUSS PART No. HOLDER
M1	3AG Slo-Blo	2/10A 125VAC	453214A-1	453330A-1	313.200 (3AG-2/10A-Slo-Blo)	357001	MDL-2/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA CAPEHART PART No.		NOTES
M2	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M3	RF Tuner	850222B-1	
M4	Crystal		Video Detector (1N64)
M5	Switch	453166A-1	AGC Differential
M6	Centering Magnet	650471A-2	
M7	Ion Trap	650276A-6	
	Trimmer Capacitor	450527B-1	Horiz. Drive, (40-450MMF)
	Knob	650592A-1	Verticle Hold
	Knob	650592A-2	Contrast
	Knob	650593A-1	Fine Tuning
	Knob	650593A-2	Shading
	Knob	650594B-G4	Off/On Volume
	Knob	650594B-G3	Channel Selector
	Knob	650651A-G3	Horiz. Hold

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check adjustment of A13 (4.5MC trap). Check local oscillator adjustment and video IF alignment.

POOR RESOLUTION

Check alignment of video IF strip. If alignment cannot be brought within tolerance, substitute video IF tubes and check circuit components.

SMEAR

Substitute V7 and V8. Check circuit components, especially the peaking coils.

ONE WIDE BLACK BAR

Check tuner, video IF and Video amplifier tubes for heater to cathode leakage.

POOR CONTRAST

Check amplitude of signal at W3.

If Unsatisfactory	If Satisfactory
Check waveform W2.	Check picture tube and picture cathode circuit.

Check amplitude of waveform W2.

If Unsatisfactory	If Satisfactory
Check video IF, video detector and V7 tubes and associated components.	Substitute V8. Check associated components.

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L. F. [illegible] TOWNSHIP
DENVER, COLORADO

AUDIO

WEAK OR NO SOUND

Substitute V7, V10 and V11.
Check soupling network between V7A and V7B. Check other components of sound circuit.

BUZZ

Check adjustment of gated beam detector following procedure outlined in alignment section. Check alignment of video IF stages. Check for overloading at W3.

DISTORTED

Check audio output stage using audio signal generator and scope. Check adjustment of gated beam detector following alignment procedure.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse in high voltage cage. Substitute V16, V17, V18 and V19.

Check waveform W16.

If Unsatisfactory	If satisfactory
Check components of V16 and coupling network between V16 and V17.	Check T2, T4 and damper components. Check high voltage filter.

WEAK HIGH VOLTAGE

Substitute V16, V17, V18, V19 and V20.
Follow procedure outlined under "Loss of High Voltage."

BLOOMING

Substitute V16, V17, V18, V19 and V20. Check associated components.
Check picture tube.

POWER

SMALL RASTER, WEAK SOUND

Substitute V20. Check for shorts in filter network. Check for sufficient line voltage.

DIM PICTURE

Measure B plus.

If Low	If Sufficient
Substitute V20. Check filter capacitors for leakage. Check line voltage.	Check components of boost B+ circuit.

GENERAL

NO PICTURE, NO SOUND, NO SNOW

Substitute V3, V4, V5, V6 and V7.
Check associated components.

SNOW, BUT NO PICTURE OR SOUND

Substitute V1 and V2 and check tuner components.

INTERMITTANT STREAKS

Check high voltage circuit for corona discharge and leakage.

COMPLETE LOSS OF SYNC

Substitute V12 and V13. Check associated components.

The Trouble - Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENT S

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

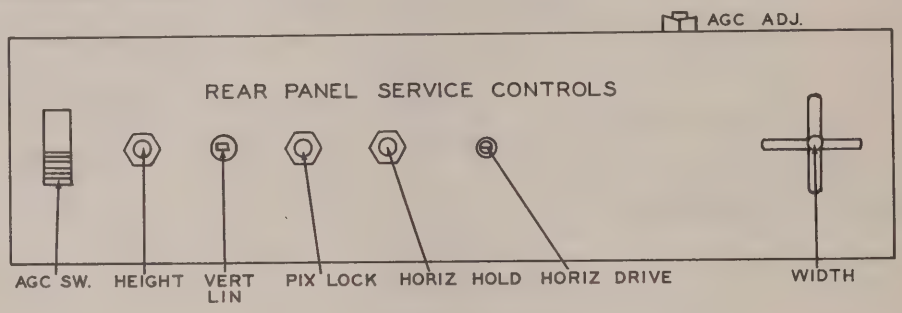
To remove safety glass, loosen the screw which holds a small catch, located on the underside of chassis shelf at the right front of the cabinet, and slide back the small catch. (On table models a metal plug button is used in place of the catch, pry this plug loose with a screwdriver.)

From the exposed hole, pull out the strip of felt, which holds the glass into slots in the sides of the cabinet. Slide the glass to the right until it is free of slot in the cabinet at the left. Tilt the glass forward at the left and remove from cabinet. Use extreme caution when removing the safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS- PICTURE LOCK ADJUSTMENT

Set picture lock control fully clockwise, then rotate slowly counter clockwise to the point where a slight shift of picture is noted. Back control off slightly in a clockwise direction.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Osc. should not be attempted in the field. For proper adjustment, see HORIZ. SWEEP CIRCUIT ADJUSTMENT page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT - GATED BEAM DETECTOR

This adjustment should not be attempted in the field for proper adjustment see Alignment Instructions pages 6 and 7.

FUSES

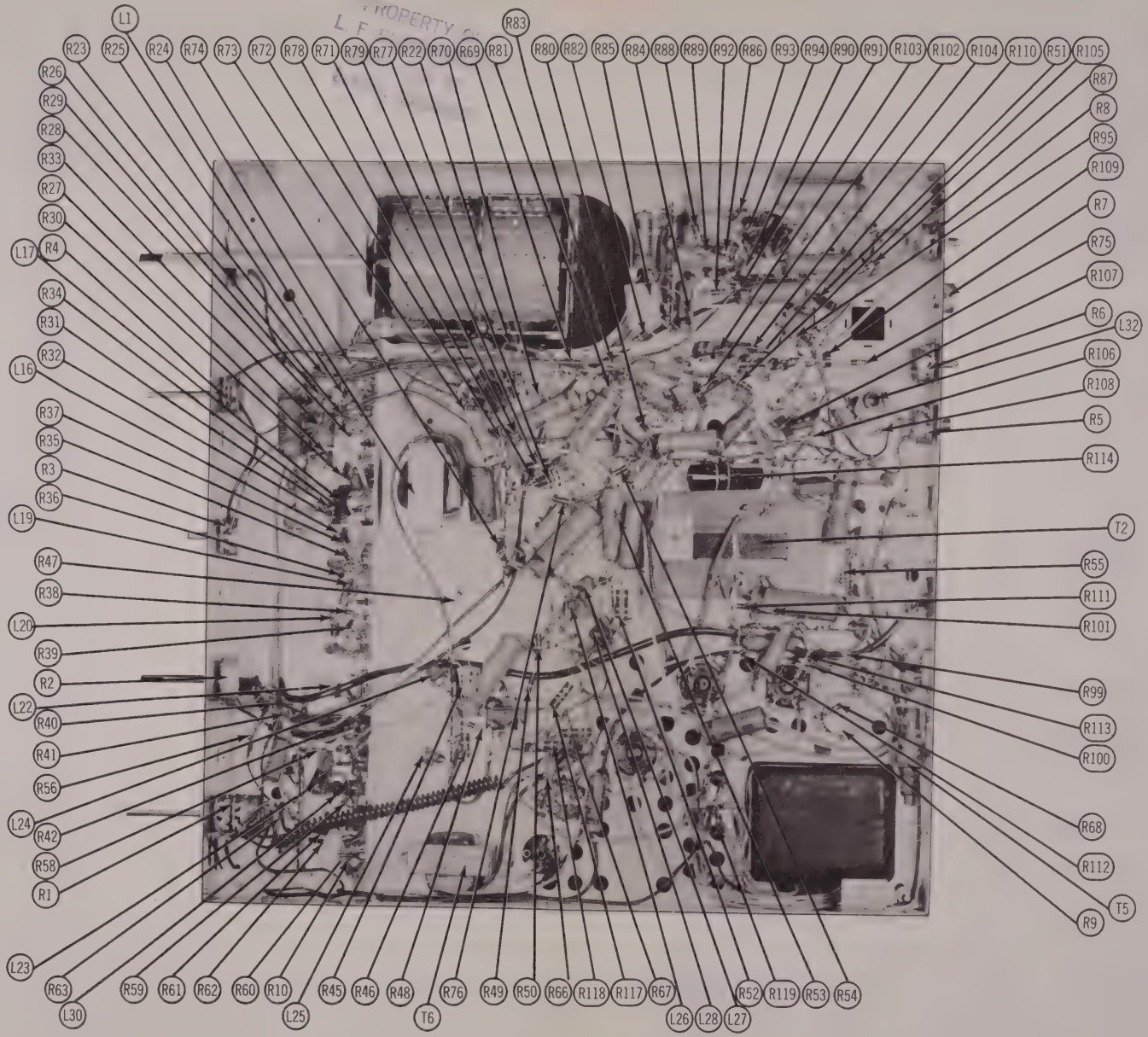
One fuse is used for Horiz. Sweep Circuit protection. (See tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

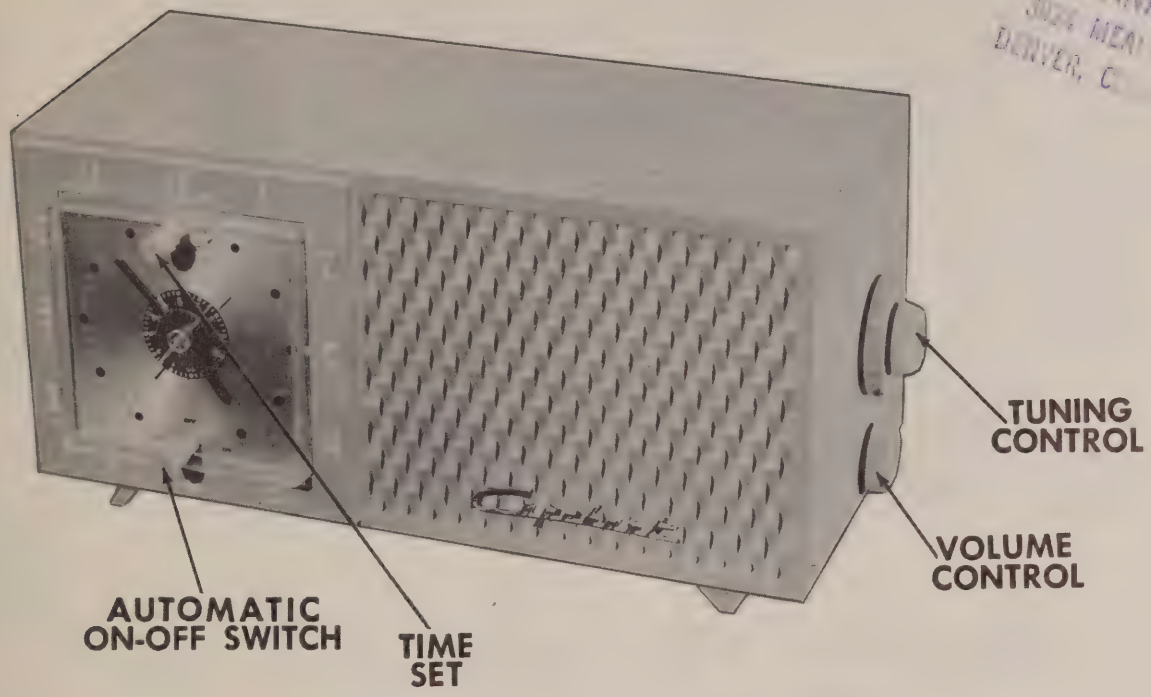
1. Remove 7 push on type control knobs from front panel.
2. Remove 7 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket .
4. Disconnect speaker. Remove 4 speaker nuts. Remove speaker.
5. Remove 6 chassis bolts. Remove chassis.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY
L. F. BLANK
DENVER, C

CAPEHART
MODELS TC-100 (Ch. C-297), TC-101 (Ch. CR-36)



CAPEHART
MODELS TC-100 (Ch. C-297), TC-101 (Ch. CR-36)

TRADE NAME	Capehart Models TC-100 (Ch. C-297), TC-101 (Ch. CR-36)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Indiana
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Type 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C 5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~Mod.)	Quiet point	Across voice coil	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1620KC	Tuning gang fully open	"	A5	"
3.		"	1500KC	Tune to 1500KC signal	"	A6	"
4.		"	600KC	Tune to 600KC signal	"	A7	Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		CAPEHART PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	7BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	650326A-1	PRS150/50-50		EDL5515		2N521	TVA-2453	
B	50	150								
C2	470		2239-013	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C3	56		2241-554	SI56	D6-560		GP1K-560	UC-5456	5GA-Q56	
C4	.047	200	2246A-4730	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C5	150		2240-021	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C6A	220		♦452244A-1		♦PC-150		♦1408-01		♦103C4	
B	.002									
C	.005									
D	250									
E										
C7	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C8	.022	600	2244-2230	P688-022		PTE6S22		PT6122	6TM-S22	
C9	.047	600	2244-4730	689ZX-05		PJ6S47		PT6147	6TM-S47	

♦ Items C6A, C6B, C6C, C6D, C6E, R6A, R6B, R6C are combine in one unit.
When replacing items separately C6D and C6E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	452241A-1	Q13-133	AG-60-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.	
R2	22KΩ	½	3229-223	BTS-22K	
R3	1 Meg	½	3229-105	BTS-1 Meg	
R4	150Ω	½	3229-151	BTS-150	
R5	3.3Meg	½	3229-335	BTS-3.3Meg	

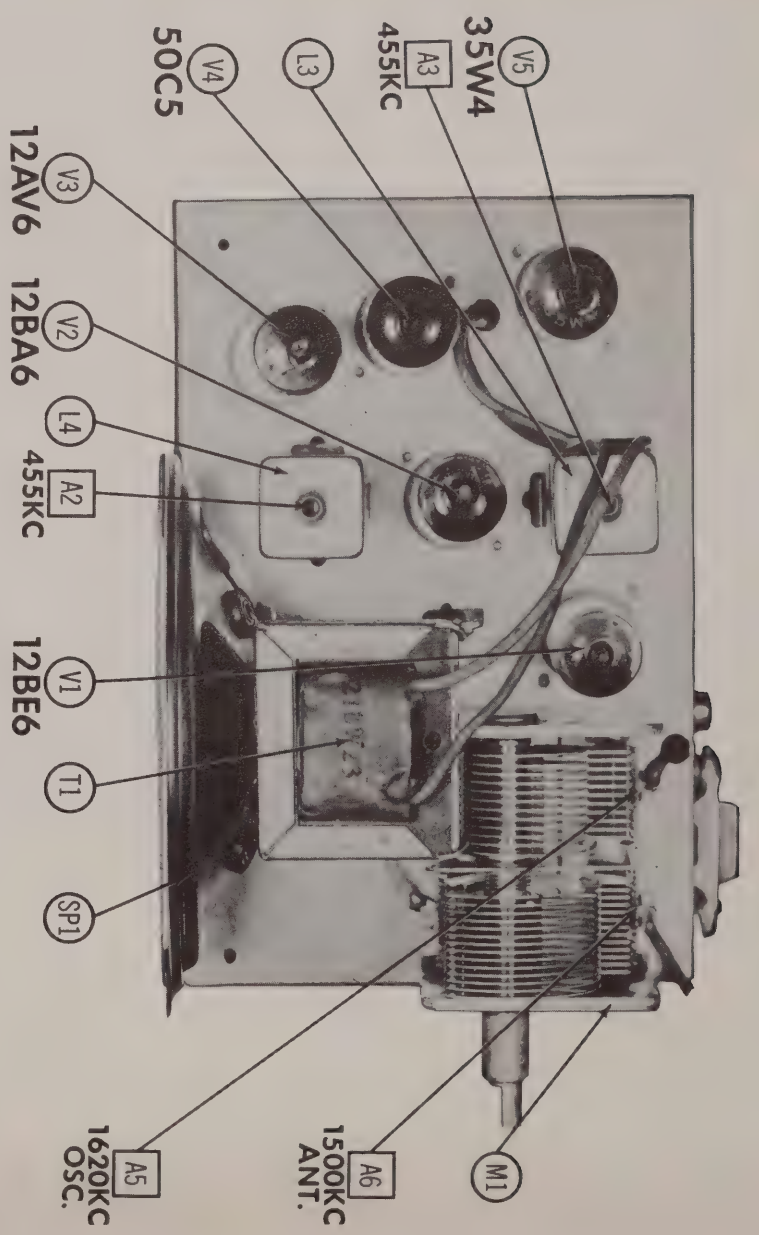
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.	
R6A	6.8Meg	½	♦452244A-1	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R7	150Ω	½	3229-151	BTS-150	
R8	1500Ω	1	3232-152	BTA-1500	
R9	220KΩ	½	3229-224	BTS-220K	

♦ Items R6A, R6B, R6C, C6A, C6B, C6C, C6D, C6E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.25KΩ	3.3Ω	214Ω	.8Ω	Part of speaker	A-3876 ①	A-2928①	RO-2 ①	S-2X ①	① Bend mtg. tabs down, file out slots mount on original mtg. bracket

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	750204A1	ST-113 Mod. P4-X	4A07	

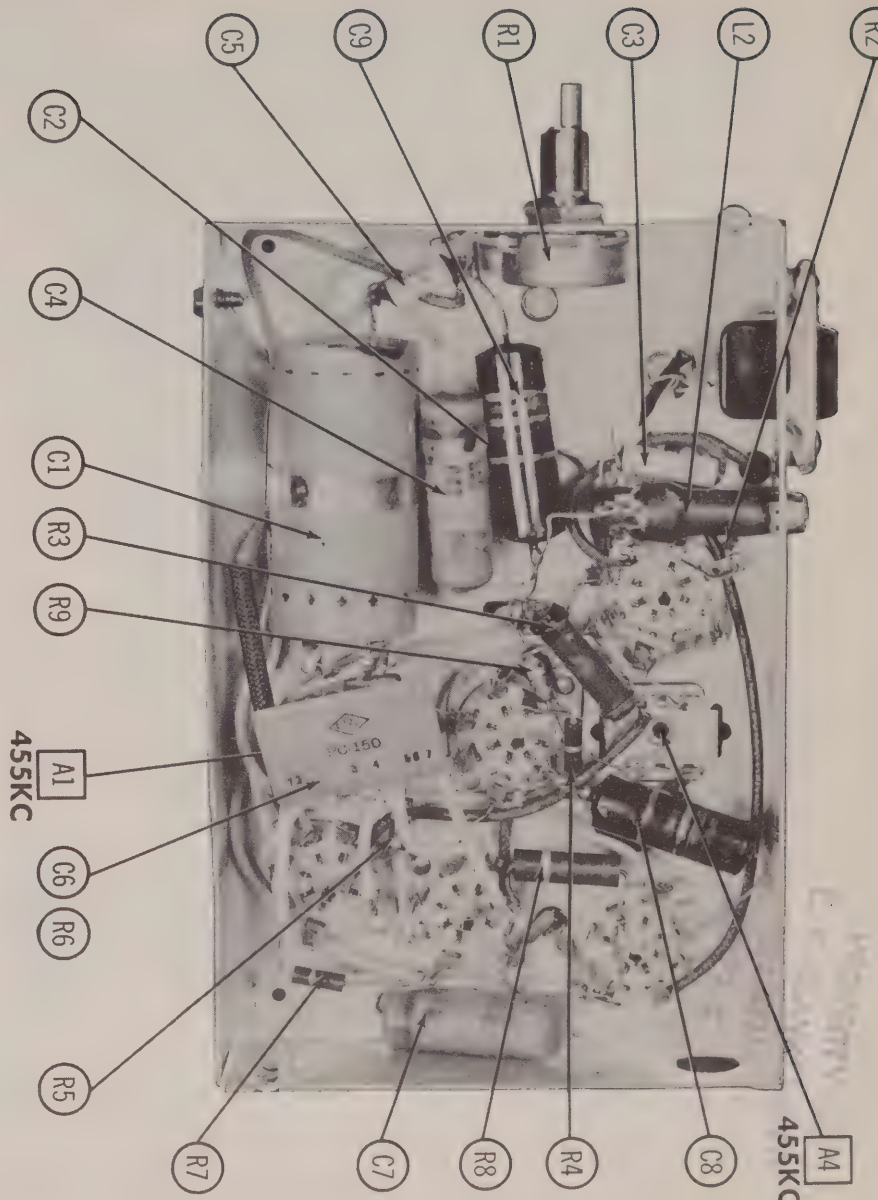
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	CAPEHART PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	3Ω		750207A-1			
L2	Osc. Coil	.8Ω	10.5Ω	452242A-1	71-OSC	14-1040	
L3	Input IF	21Ω	14Ω	452243A-1	12-C1	16-6758	
L4	Output IF	14Ω	14Ω	452243A-1	12-C2	16-6758	

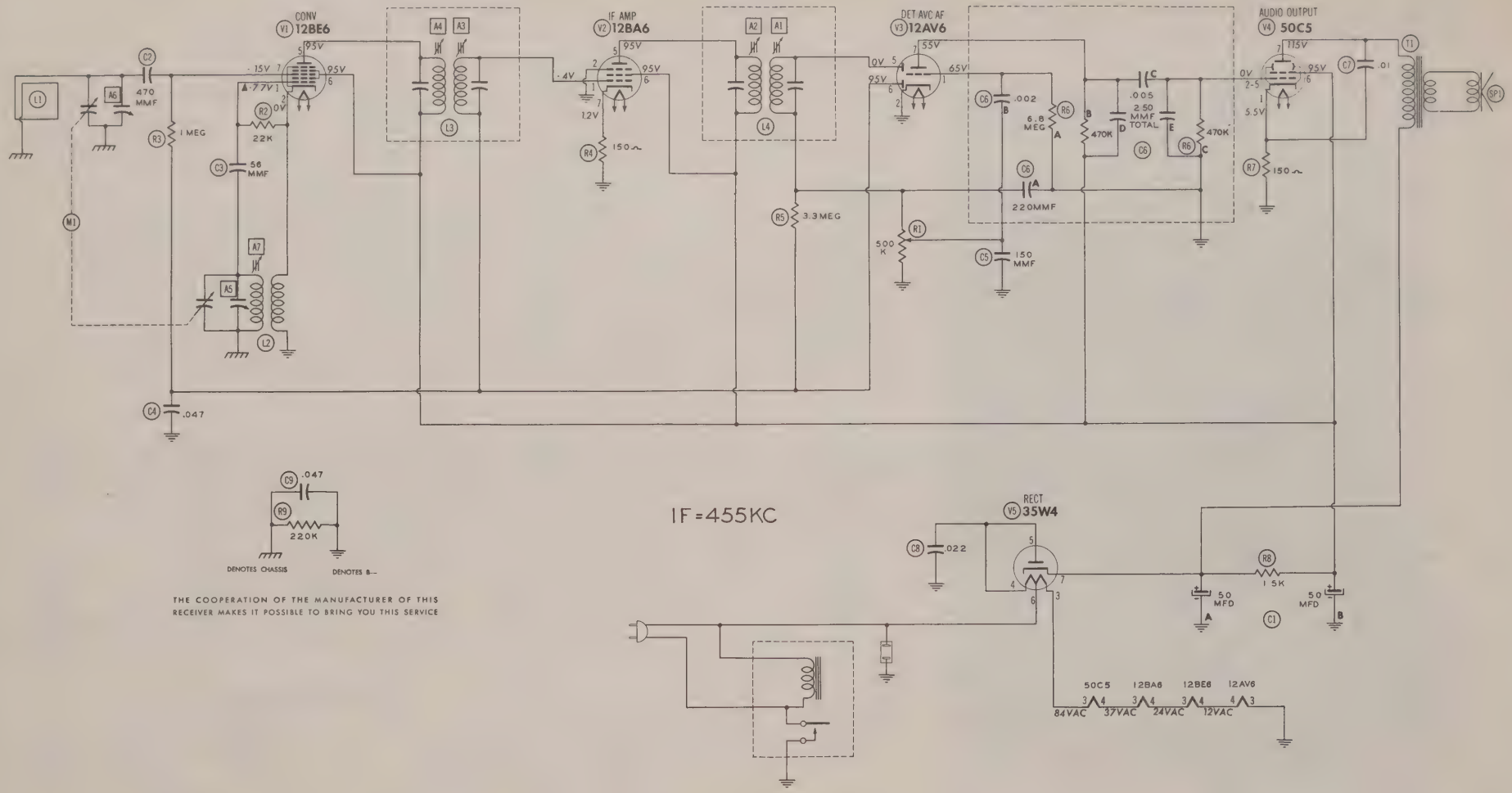
MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M1	Tuning Capacitor	650327A-1	29-467MMF, 33-186MMF
	Clock Assembly	750311A-1	
	Cabinet	850206A-1	Brown, Model TC-100
	Cabinet	850206A-4	Ivory, Model TC-100
	Cabinet	850206A-6	Grey-Blue, Model TC-101
	Back	750310A-1	Includes loop, Model TC-100
	Back	750310A-2	Includes loop, Model TC-101
	Knob	650325A-8	Tuning, Brown, Model TC-100
	Knob	650325A-10	Tuning, Ivory, Model TC-100
	Knob	650325A-1	Tuning, Grey-blue, Model TC-101
	Knob	452240A-8	Volume, Brown, Model TC-100
	Knob	452240A-10	Volume, Ivory, Model TC-100
	Knob	452240A-1	Volume, Grey-blue, Model TC-101
	Knob	452233A-2	Clock (2 used)

CHASSIS—BOTTOM VIEW



CAPEHART
MODEL TC-100 (Ch. C-297)



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	4.8Meg
V 2	12BA6	3.8Meg	0Ω	36Ω	24Ω	†1.5KΩ	†1.5KΩ	150Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	3.8Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	†1.5KΩ	†215Ω
V 5	35W4	INF	†0Ω	86Ω	112Ω	112Ω	106Ω	500KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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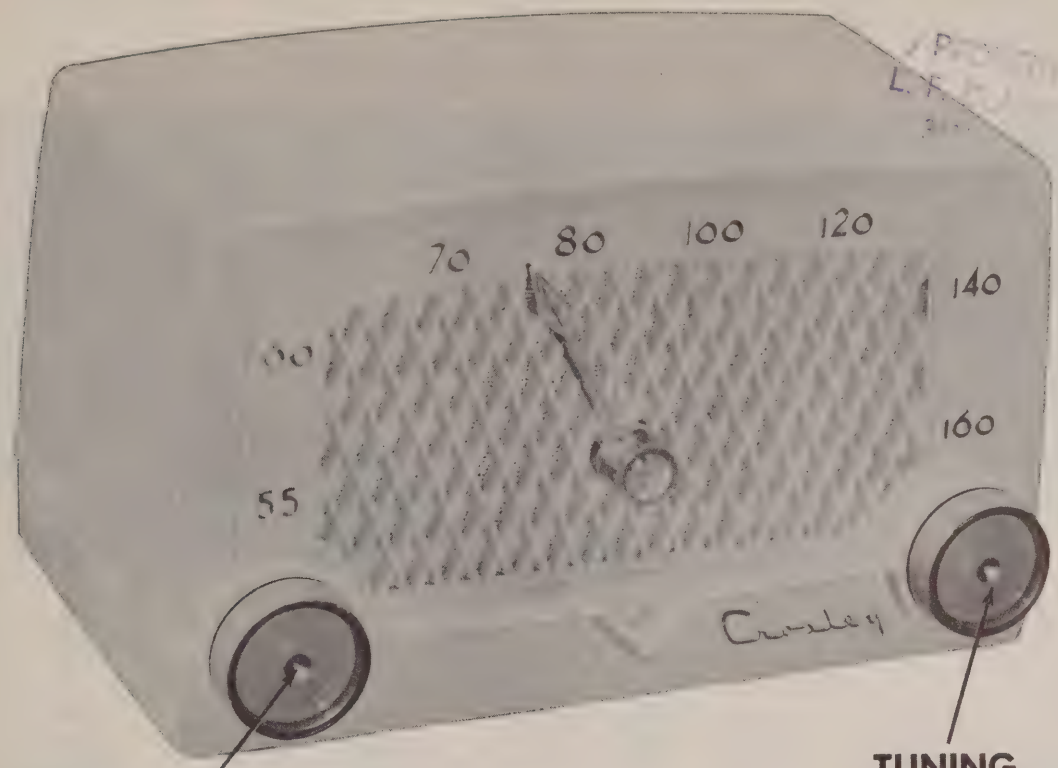
203-5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CROSLEY
MODELS E10BE, CE, RD, WE (Ch. 10E, 10E-1)



CROSLEY
MODELS E10BE, CE, RD, WE (Ch. 10E, 10E-1)

TRADE NAME	Crosley Models E10BE, CE, RD, WE (Ch. 10E, 10E-1)
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BD6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC/DC — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to inner terminal of antenna loop. Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BD6	12BD6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	154280	AFH2-15		BO15		FP213	TVL-2432	Note 1
B	▲30	150								Note 1
C2	39		137727-109							
C3	.08	200	39001-85							
C4A	220		♦151550-1		♦PC-151		♦1408-02		♦103C4	
B	.002									
C	5000									
D	250									
E										
C5	.02	400	39001-80	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C6	.047	400	39477-45	489ZX-05		PJ4S47		PT4147	4TM-S47	
C7	.08	200	39001-85							

Note 1. Ch. 10E-1 replaces C1 with dual 20MFD unit (Part #151617).
♦ Items C4A, C4B, C4C, C4D, C4E, R6A, R6B, R6C are combined in one unit.
When replacing items separately, C4D and C4E should total 250MMF.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	39374-41	BTS-22K	
R3	10Ω	½	39374-1		
R4	2.2Meg	½	39374-69	BTS-2.2Meg	
R5	47KΩ	½	39374-45	BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6A	6.8Meg	½	♦151550-1	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R7	150Ω	½	39374-15	BTS-150	
R8	10Ω	½	39374-26		Note
R9	1200Ω	1	39374-1	BTA-1200	

Note . Used only in chassis No. 10E-1.
♦ Items R6A, R6B, R6C, C4A, C4B, C4C, C4D, C4E are combined in one unit.

CONTROLS

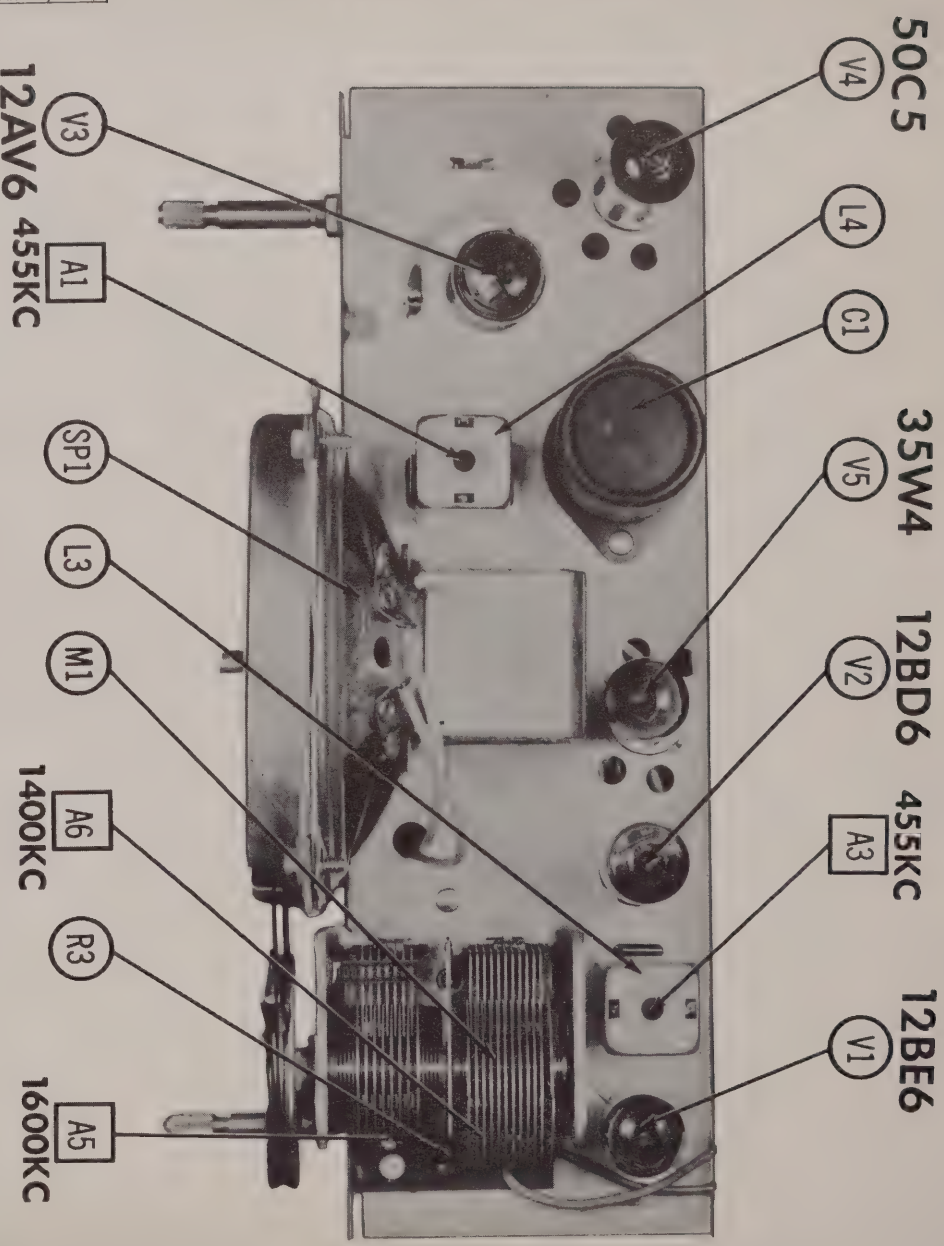
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	B-153599-A	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume-Note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

Note . Some models may use alternate control (Part No. 39378-13).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.3KΩ	5.9Ω	184Ω	.58Ω	B-137723A 138131-1 ②	A-3876	A-3025 ①	RO-302	S-1X	① Drill one new mounting hole. ② Alternate transformer

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.9Ω	148400 135632 ①	ST-113 Mod. P4-X	4A1	① 4" EM speaker used on 10E-1 chassis

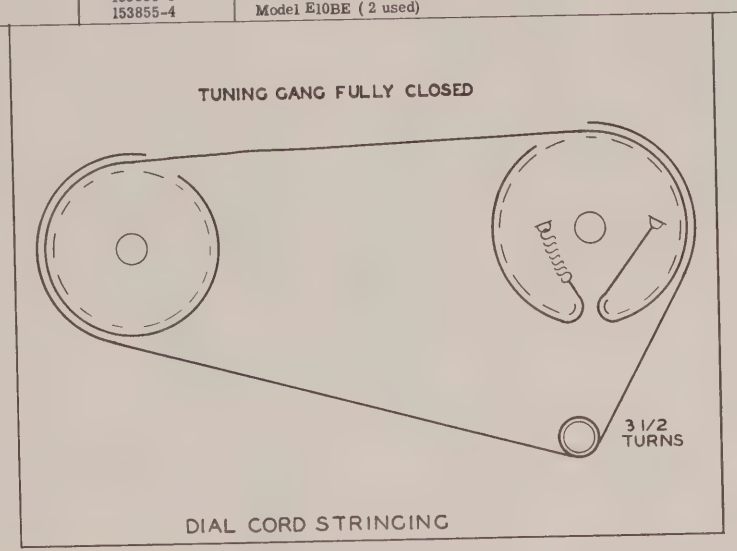
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	CROSLEY PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.7Ω		153872			Includes cabinet back
L2	Osc. Coil	.8Ω	10Ω	153405	71-OSC *	14-1040 *	
L3	Input IF	14Ω	14Ω	139919-3	12-C1	16-6758	
L4	Output IF	14Ω	14Ω	139919-3	12-C2	16-6758	

* Drill mounting hole.

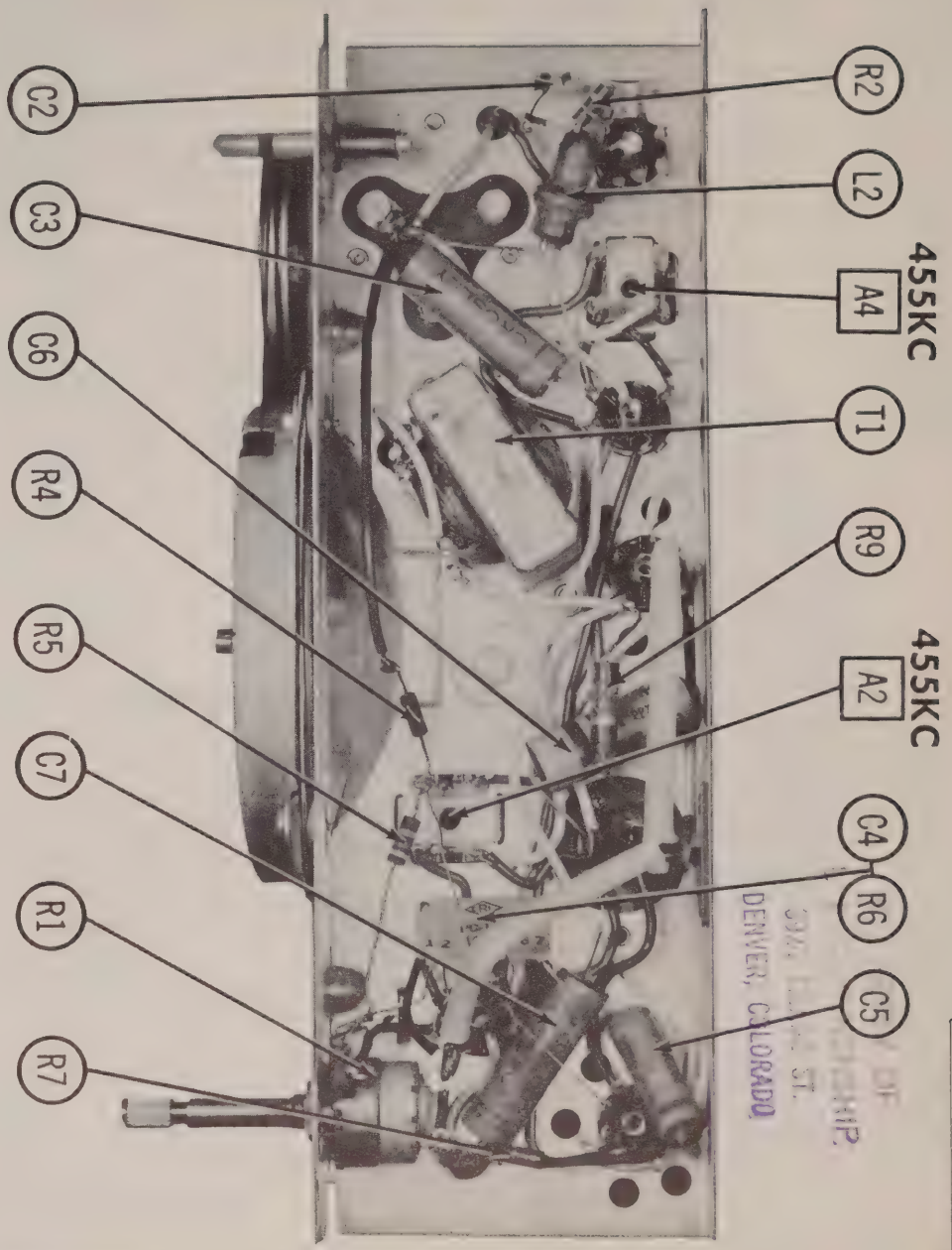
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M1	Tuning Capacitor	153497	Includes pulley
	Cabinet	E10BE	
	Cabinet	E10CE	
	Cabinet	E10RD	
	Cabinet	E10WE	
	Pointer	153846	
	Knob	153855-1	Model E10WE (2 used)
	Knob	153855-2	Model E10CE (2 used)
	Knob	153855-3	Model E10RB (2 used)
	Knob	153855-4	Model E10BE (2 used)



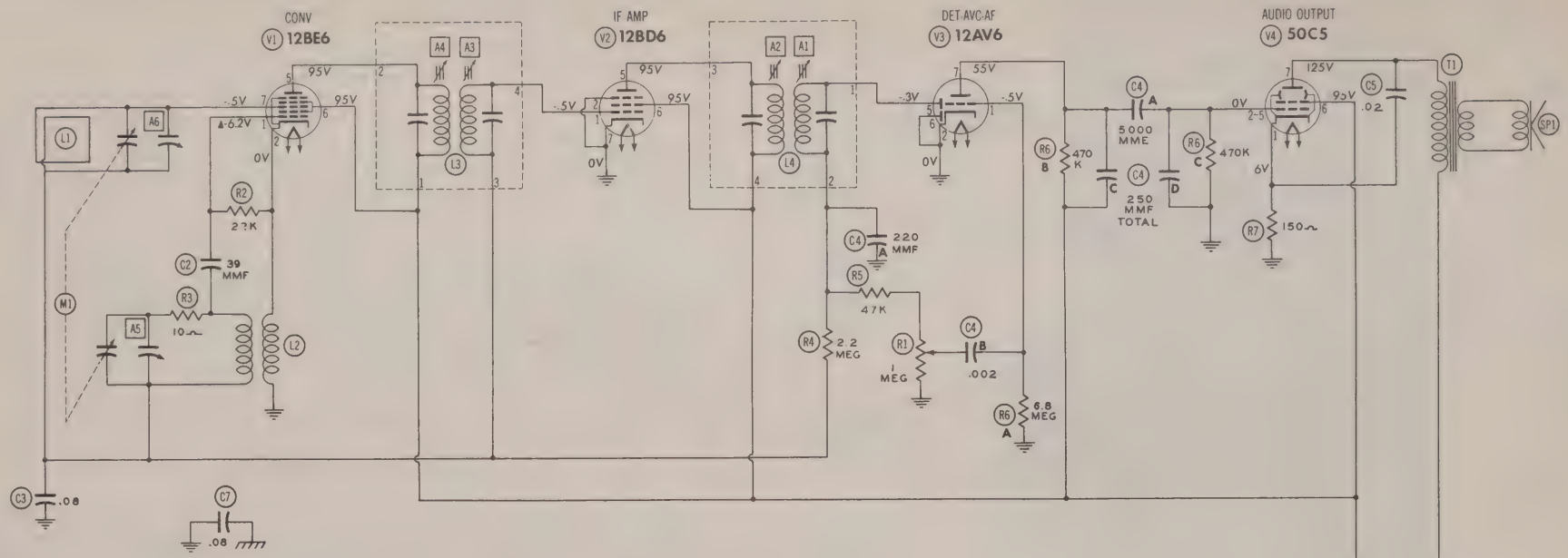
DIAL CORD STRINGING

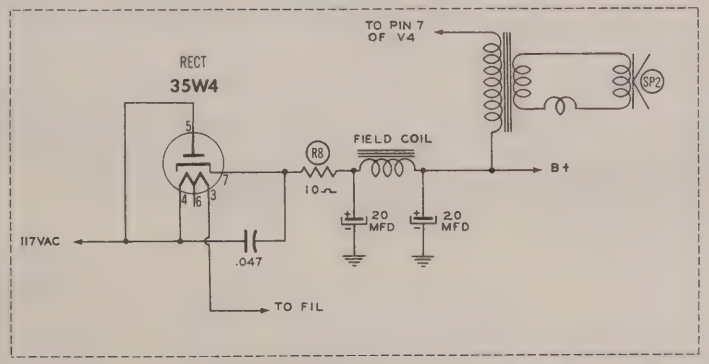
CHASSIS—BOTTOM VIEW



DENVER, COLORADO

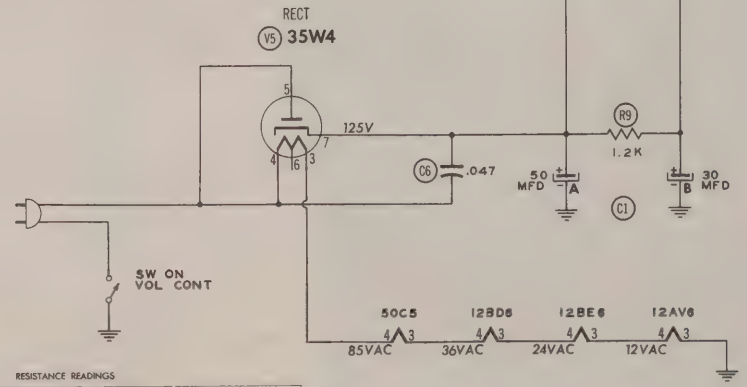
CROSLEY
MODEL E10BE (Ch. 10E, 10E-1)





ALTERNATE POWER SUPPLY FOR CHASSIS 10E-1

IF = 455KC



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	12Ω	24Ω	†1.2KΩ	†1.2KΩ	3.2Meg
V 2	12BD6	3.2Meg	0Ω	24Ω	36Ω	†1.2KΩ	†1.2KΩ	0Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	1 Meg	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	35Ω	85Ω	470KΩ	†1.2KΩ	†184Ω
V 5	35W4	INF	INF	85Ω	120Ω	110Ω	INF	200KΩ

† MEASURED TO PIN 7 OF V5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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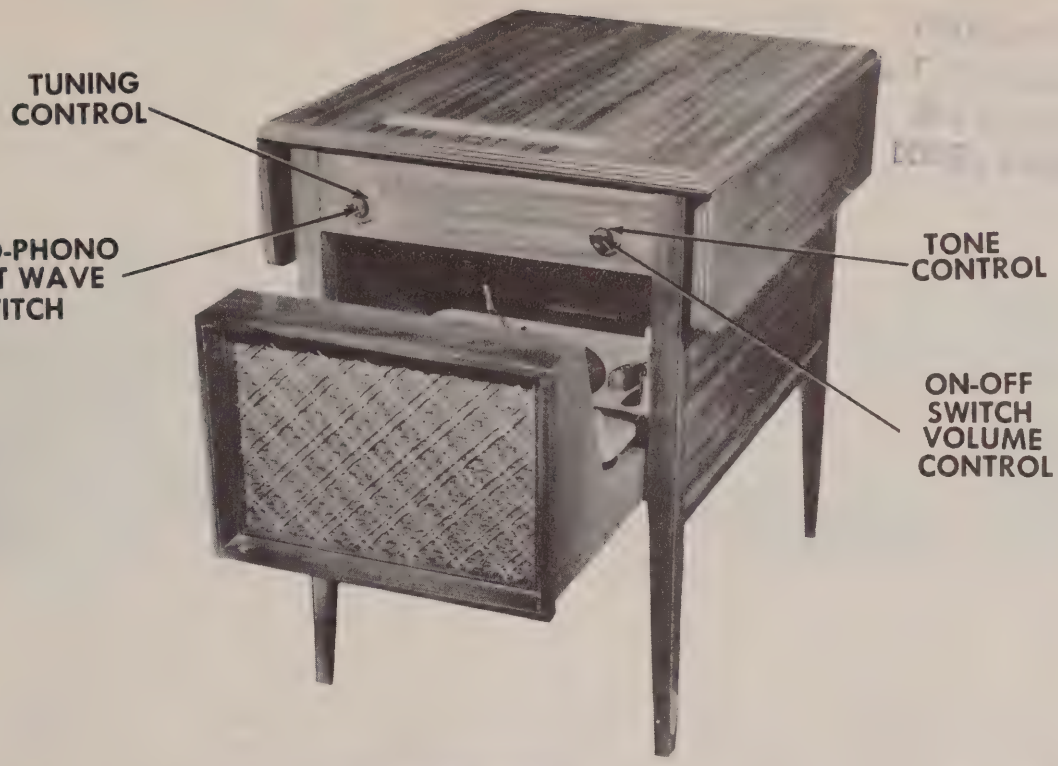
203-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO MODEL 53-1750

TRADE NAME	Philco Models 53-1350, 53-1750
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Radio-Phono Combination 2 Band Superheterodyne Receiver
TUBES (Five)	Types 7A8 Conv., 7B7 IF Amp., 7C6 Det.-AVC-AF Amp., 35L6GT Audio Output, 50Y7GT Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles — RATING .32 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	C 540-1620 KC — SPECIAL SERVICES 1700-3400KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Set tone control fully counter clockwise (treble position).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 7A8 (V1). Low side to B-.	455KC (400%Mod)	BC	Tuning gang fully open	Across Voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	1620KC	"	A5	Place a .006 inch non-metallic shim between heel of rotor and the top of stator plates. Close rotor just enough to clamp shim loosely. Then remove shim without disturbing gang setting. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	"	Tune to 1500KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	3200KC	Special Services	Tune to 3200KC signal	"	A7	"

RECORD CHANGER UNIT- PHILCO MODEL M-24

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	7A8	7A8	8U	
V2	IF Amplifier	7B7	7B7	8V	
V3	Det-AVC-AF Amp.	7C6	7C6	8W	
V4	Audio Output	35L6GT	35L6GT	7S	
V5	Rectifier	50Y7GT	50Y7GT	8AN	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	20	150	30-2568-22	E3A38		A046		FP144	TVL-1405	
C2 A	40	250	30-2575-32	E58C36		EDL4425C		3N535		Orange
B	40	250				BR4015A		TC58		Red
C	40	150								Blue
D	25	25								Yellow
C3	725	500	30-1220-69							
C4	220	500	62-122001001	1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C5	.1	400	30-4650-47	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C6	7.5		30-1224-65							
C7	.05	400	30-4650-45	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.1	200	30-4650-47	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C9	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C10	47		60-00475420	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C11	.006	400	30-4650-57	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	Note 1
C12	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C13	.0047	400	30-4650-56	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C14A	.005									
B	250		♦30-6001		♦PC-70		♦1406-01		♦104C4	
C										
C15	.0047	400	30-4650-56	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C16	.04	400	30-1226-17			PJ6S4			6TM-S4	
C17	.1	400	30-4650-47	P488-1		PTE4P1		PT401	4TM-P1	
C18	47		60-00475420	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C19	5		30-1221-5	SI5	TCZ-4.7	5W5V5	GP1K-050	UC-555	5GA-V5	Note 2

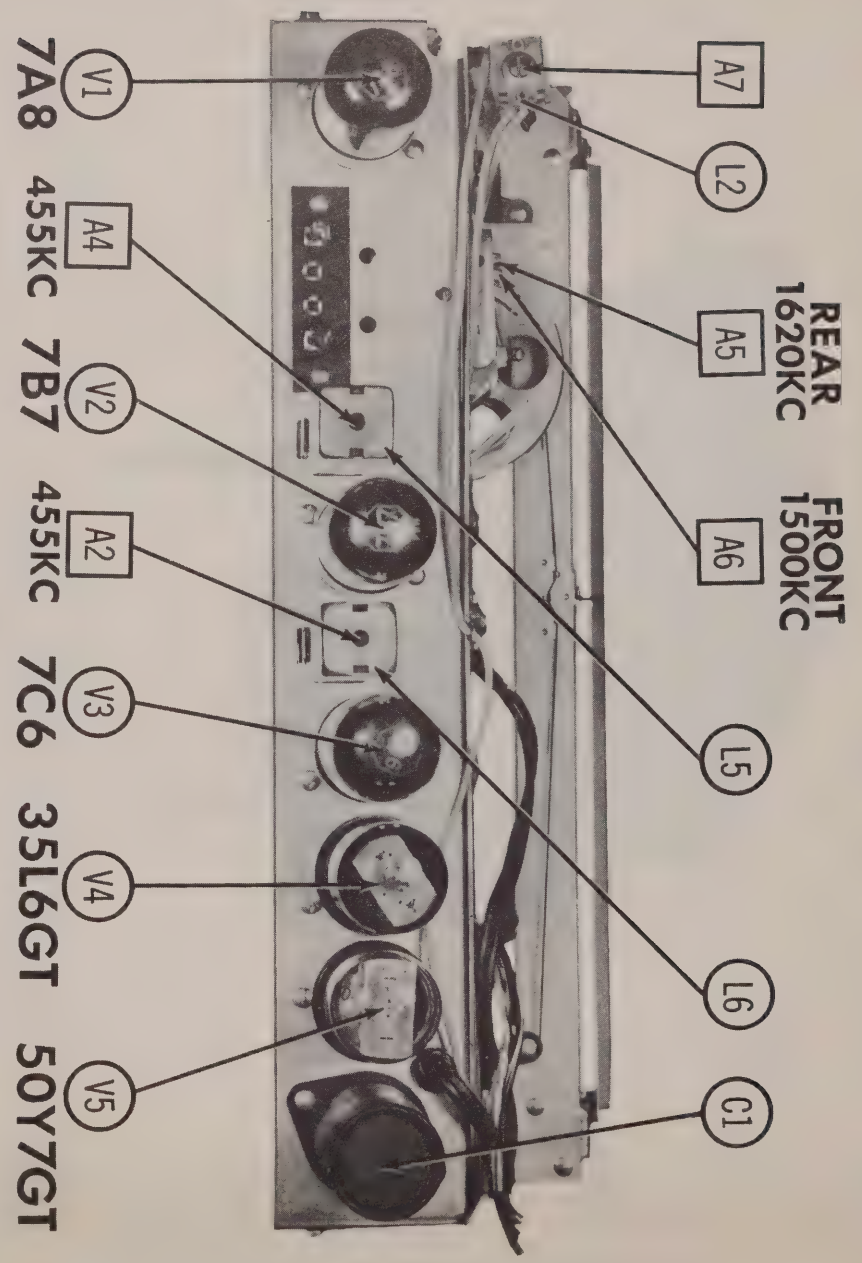
Note 1. Model 53-1350 uses .0047MFD in this application (Part #30-4650-56).
Note 2. Used in Model 53-1350 only.
♦ Items C14A, C14B, C14C, R11A, R11B are combined in one unit.
When replacing items separately C14B and C14C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	5 Meg	½	33-5563-60	QJ-430R*				Tone-Panel-Note
B	2 Meg	½						Volume & Switch Tap @ 700KΩ-Rear

Note . Model No. 53-1350 uses alternate control part No. 33-5563-55.
* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B12-141 & P1-308 (Panel)
B18-139X & R1-323 (Rear) & SWITCH 76-1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	150KΩ	½	66-4158340	BTS-150K	Note 1
R3	470KΩ	½	66-4478340	BTS-470K	
R4	100KΩ	½	66-4108340	BTS-100K	
R5	180Ω	½	66-1188340	BTS-180	
R6	27KΩ	½	66-3278340	BTS-27K	
R7	39KΩ	½		BTS-39K	Note 2
R8	470KΩ	½	66-4478340	BTS-470K	
R9	1.8Meg	½		BTS-1.8Meg	Note 3
R10	10Meg	½	66-6108340	BTS-10Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R11A	500KΩ	½	♦ 30-6001		
B	500KΩ				
R12	68KΩ	½	66-3688340	BTS-68K	
R13	180Ω	1	66-1184340	BTA-180	
R14	5000Ω	7	33-1335-95	1 3/4A-5000	
R15	270Ω	7	33-1335-91	1 3/4A-300	
R16	*	*	33-1343-3		
R17	150KΩ	½	66-4158340	BTS-150K	

Note 1. Used only in model No. 53-1350.
Note 2. Some models use a 47KΩ resistor in this application.
Note 3. Some models use a 2.2Meg resistor in this application.
♦ Items R11A, R11B, C14A, C14B, C14C are combined in one unit.
* Special resistor -880Ω Cold, 100Ω Hot.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	4.1KΩ	3.14Ω	435Ω	.91Ω	32-8242-9	A-3823	A-3019	RO-9 ①	S-4X ①	① Drill one new mounting hole .

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	8"	PM	3.14Ω	36-1626-5 36-1639 ①	ST-806 Mod. P7-U	8A21	① 5" PM Speaker used in model 53-1350

COILS (RF-IF)

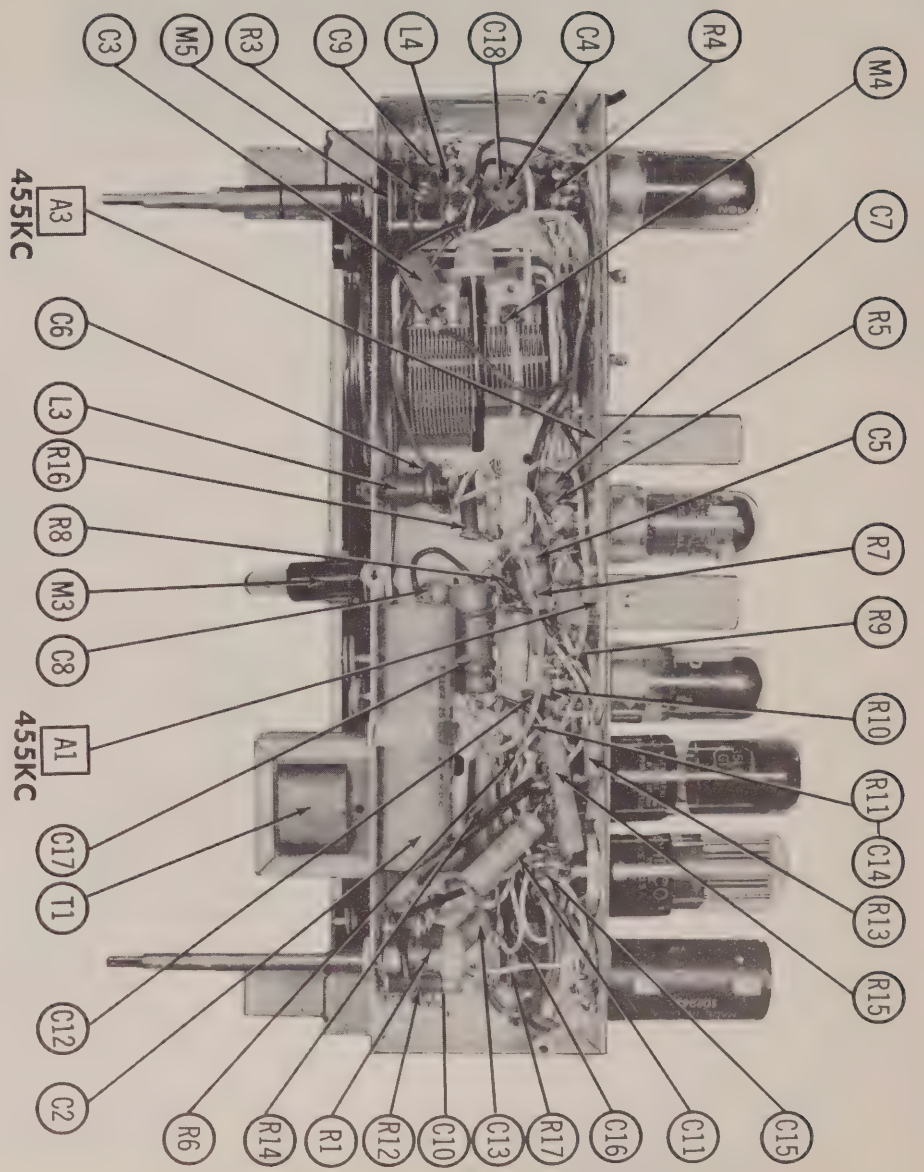
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MILLER PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L1	Loop Ant.	3.4Ω		76-2127-13			
L2	SS Ant. Coil	2.1Ω		32-4561-6 *			
L3	BC Osc. Coil	1.7Ω	6.8Ω	32-4453-2	70-Osc.	14-1073	
L4	SS Osc. Coil	3.1Ω		32-4562-1			
L5	Input IF	11.5Ω	11.5Ω	32-4160A	12-C1	16-6758	
L6	Output IF	14Ω	14Ω	32-4240A	12-C6	16-6770	

* Model 53-1350 uses part No. 32-4561-5 in this application.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA PHILCO PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	45-9612							

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

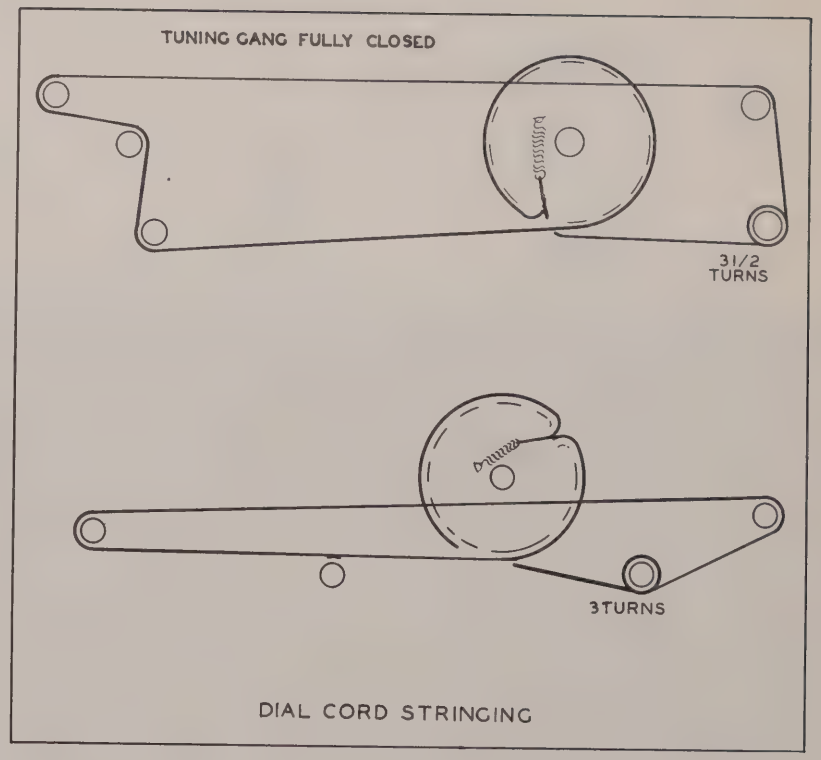
ITEM No.	REPLACEMENT DATA			REMARKS
	PHILCO PART No.	WALCO PART No.	JENSEN PART No.	
M2	45-9588	W-46TPS	PH-12 or PH-13	

DIAL LIGHTS

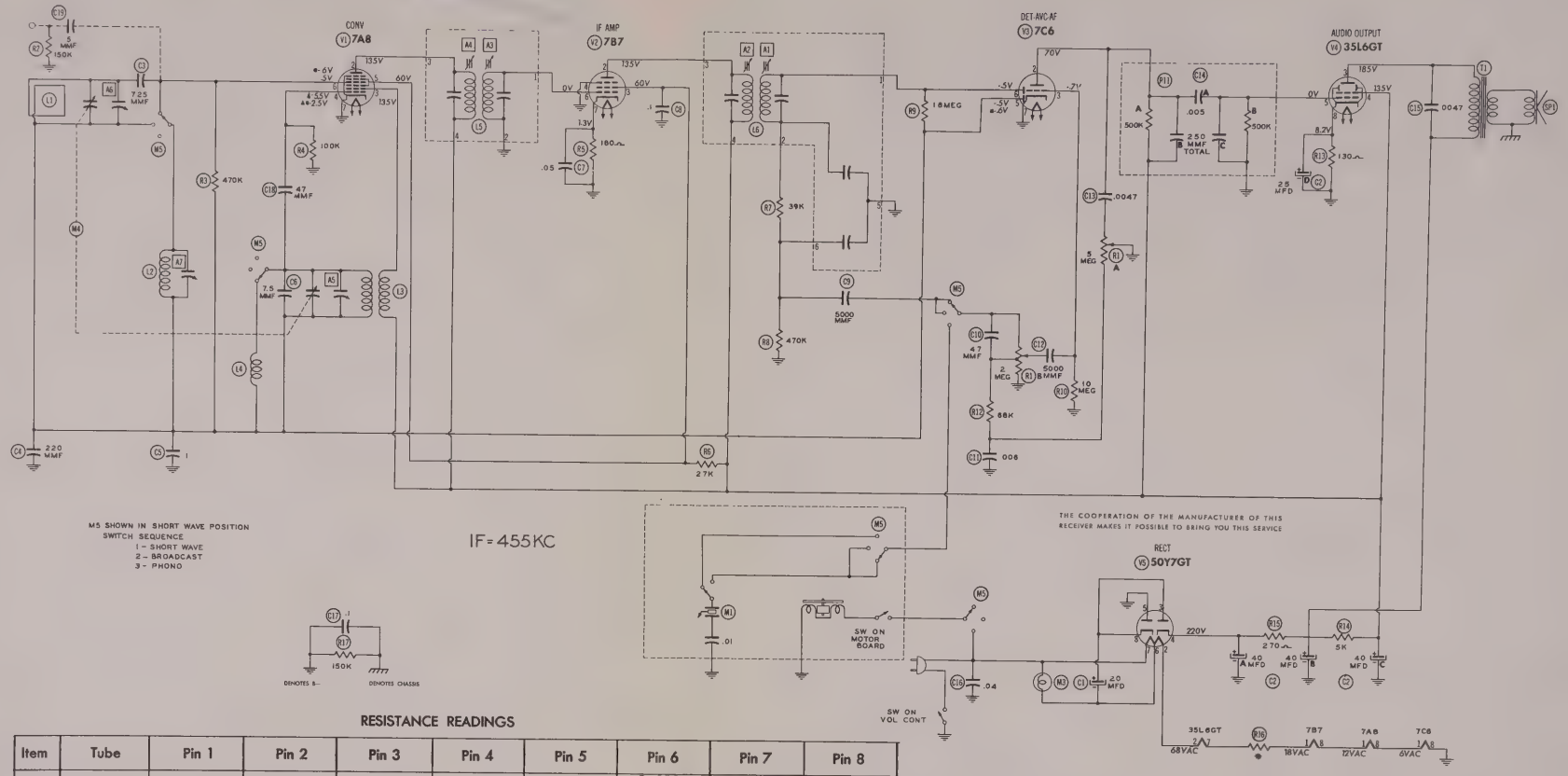
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M3	Bayonet	6-8 V.	.250	Blue	34-2064		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4A	Tuning Capacitor	31-2751-9	19-462MMF, 19-163MMF, Model 53-1350
B	Tuning Capacitor	31-2751-10	19-462MMF, 19-163MMF, Model 53-1750
M5A	Switch	42-1989	Function Selector, Model 53-1350
B	Switch	42-1989-1	Function Selector, Model 53-1750
A7	Trimmer Capacitor	31-6473-31	Antenna (Special Services)
	Cabinet	10949	Model 53-1350
	Cabinet	10962	Model 53-1750 (Mahogany)
	Cabinet	10962-1	Model 53-1750 (Blond)
	Scale	54-5156	Model 53-1350
	Scale & Bezel Assy.	76-8116	Model 53-1750
	Pointer	56-5630-50	Model 53-1350
	Pointer	56-5630-54	Model 53-1750
	Knob	54-4842-8	Off/On Volume, Models 53-1350, 53-1750 (Mahogany)
	Knob	54-4842-11	Off/On Volume, Model 53-1750 (Blond)
	Knob	54-4842-9	Function Selector, Models 53-1350, 53-1750 (Mahogany)
	Knob	54-4842-10	Function Selector, Model 53-1750 (Blond)
	Knob	54-4841	Tuning, Model 53-1350
	Knob	76-6353	Tuning, Model 53-1750 (Mahogany)
	Knob	76-6353-4	Tuning, Model 53-1750 (Blond)
	Knob	54-4841-10	Tone, Model 53-1350
	Knob	76-6353-1	Tone, Model 53-1750 (Mahogany)
	Knob	76-6353-5	Tone, Model 53-1750 (Blond)



DIAL CORD STRINGING



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A8	14Ω	†5.3KΩ	†5.3KΩ	100KΩ	†32KΩ	2.3Meg ■1.8Meg	0Ω	7Ω
V 2	7B7	21Ω	†5.3KΩ	†32KΩ	0Ω	0Ω	11.5Ω	180Ω	14Ω
V 3	7C6	7Ω	†500KΩ	10Meg	0Ω	2.2Meg	500KΩ	0Ω	0Ω
V 4	35L6GT	0Ω	770Ω	†700Ω	†5.3KΩ	500KΩ	†270Ω	740Ω	180Ω
V 5	50Y7GT	INF	770Ω	700KΩ	500KΩ	0Ω	810Ω	815Ω	700KΩ

ALL MEASUREMENTS TAKEN IN "BROADCAST" POSITION UNLESS OTHERWISE SPECIFIED
† MEASURED FROM PIN 4 OF V5
■ MEASURED IN "SPECIAL SERVICES" POSITION
▲ MEASURED WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as Bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

203-7

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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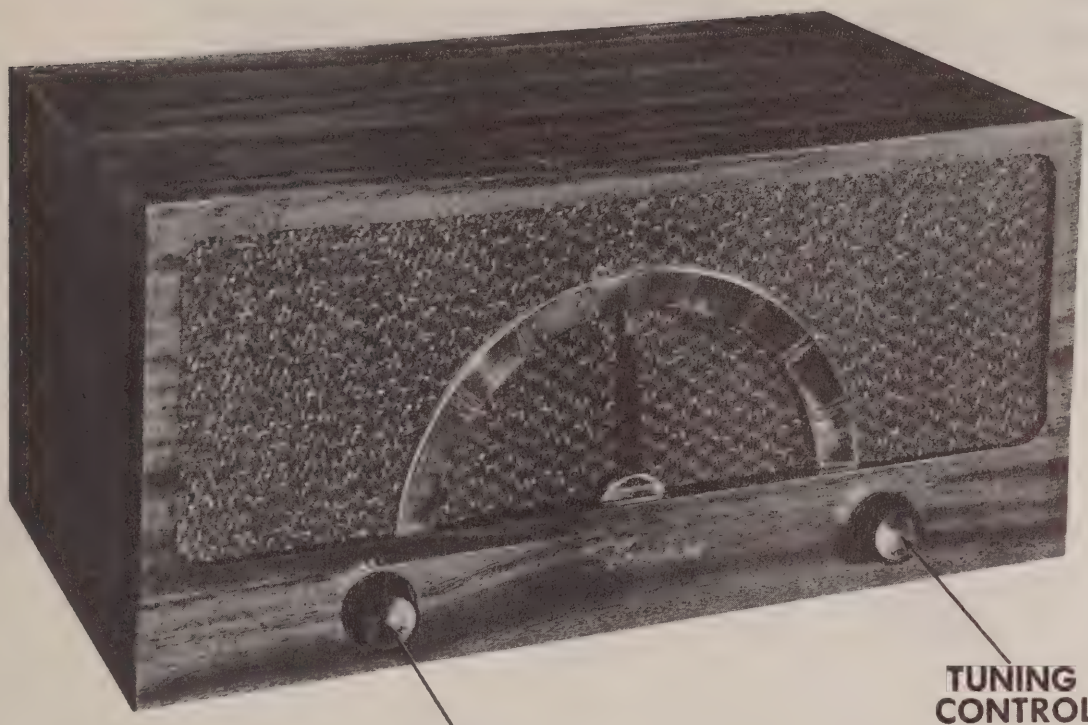
SILVERTONE
MODEL 2028 (Ch. 528.230)



SILVERTONE
MODEL 2028 (Ch. 528.230)

TRADE NAME	Silvertone Model 2028 (Ch. 528.230)
SUPPLIER	Sears Roebuck & Co., 925 South Homan, Chicago, Illinois
TYPE SET	Battery Operated AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	1.5 Volts "A" Supply & 90 volts DC "B" Supply in pack form
RATING	250MA @ 1.5 volts DC & 12.5MA @ 90 volts DC
TUNING RANGE—BROADCAST	535-1630 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set pointer for equal spacing above chassis base at both extremes of pointer travel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	High side to antenna stator of tuning gang. Low side to chassis.	1625KC	"	"	A5	"
3.	200MMF	High side to antenna lead. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

SILVERTONE
MODEL 2028 (Ch. 528.230)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	4	150	T18-273	PRS150/4		BR415		TC40	TVA-1402	
C2	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47		T15-229	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C4	.01	400	T16-192	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	5000		T16-177	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C6A	220		T17-104	SI220	D6-221	5W5T25	GP2K-221	UC-5322	34C3	
B	.002			BPD-002	DD-202	TM5D2	801-002	DC-522		
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	.005			BPD-005	MD-502	TM5D5	811-005	DC-525		
C7	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	.002	600	T16-198	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1 Meg	½	T24-200					Volume & Switch

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	100KΩ	½	T60-727	BTS-100K	
R3	10KΩ	½	T60-764	BTS-10K	
R4	10 Meg	½	T60-728	BTS-10Meg	
R5	2.2Meg	½	T60-726	BTS-2.2Meg	
R6	47KΩ	½	T60-730	BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R7	10Meg	½	T60-728	BTS-10Meg	
R8	4.7Meg	½	T60-779	BTS-4.7Meg	
R9	1 Meg	½	T60-668	BTS-1 Meg	
R10	2.2Meg	½	T60-726	BTS-2.2Meg	
R11	390Ω	½	T60-665	BTS-390	

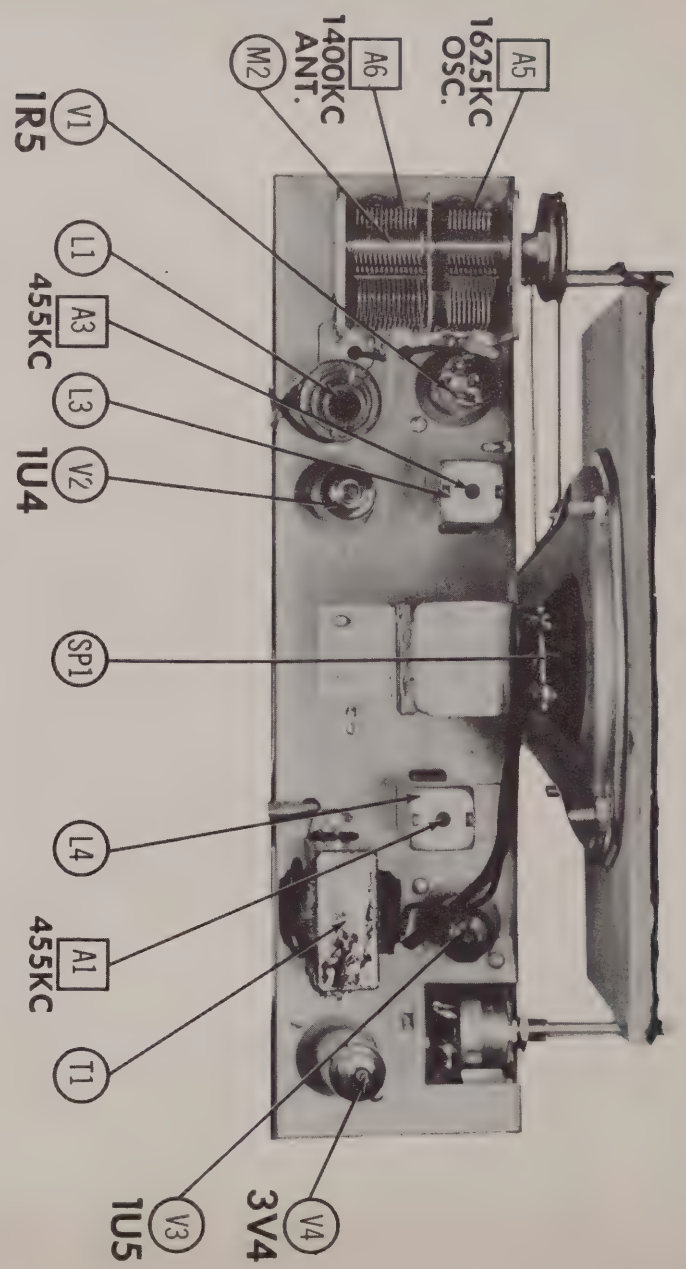
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	9.2KΩ	3.6Ω	484Ω	.7Ω	80-273	A-3879	A-2900	RO-16	S-11X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3.6Ω	79-400	ST-105 Mod. P5-X	5A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: MILLER PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L1	Ant. Coil	80Ω	7.5Ω	T10-576	72-A	14-10261 †	
L2	Osc. Coil	3.6Ω	8Ω	T10-554	70-OSC	14-1074	
L3	Input IF	20Ω	20Ω	T10-508	12-C1	16-6758	
L4	Output IF	20Ω	20Ω	T10-508	12-C2	16-6758	

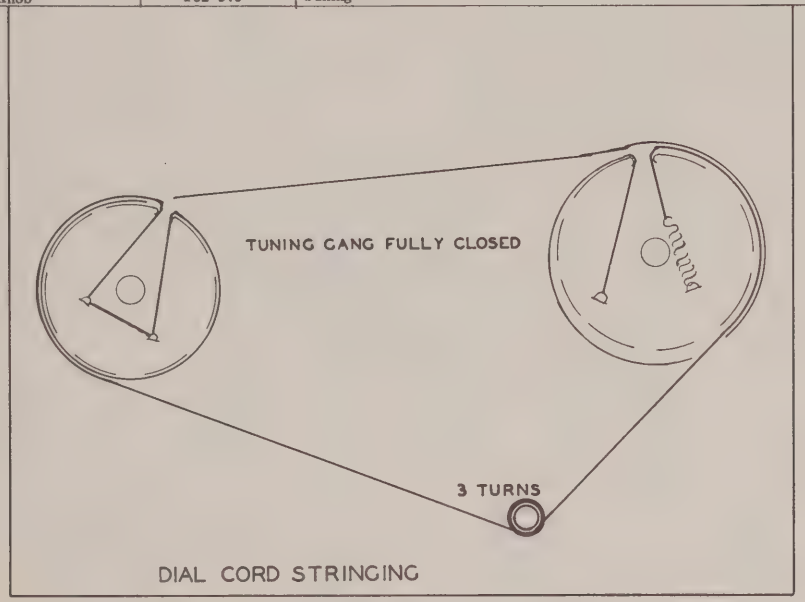
† Drill mounting hole.

BATTERIES

ITEM No.	VOLTAGE	Silvertone PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	"A"- 1½ V "B"-90V	6306 or 6312			758			4SD60	

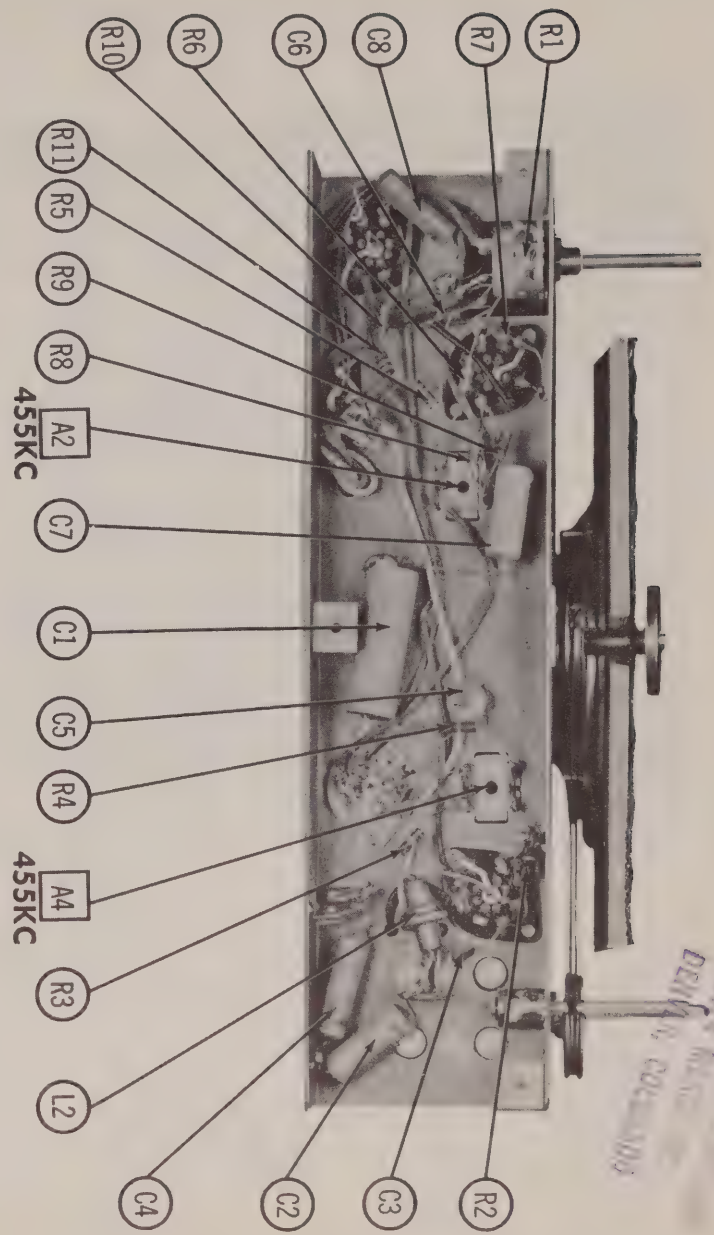
MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M2	Tuning Capacitor	T19-218	33-442MMF, 36-195MMF
	Cabinet	T42-522	
	Plate (dial scale)	T67-565	
	Pointer	T58-91	
	Knob	T52-362	Off-On Volume
	Knob	T52-370	Tuning

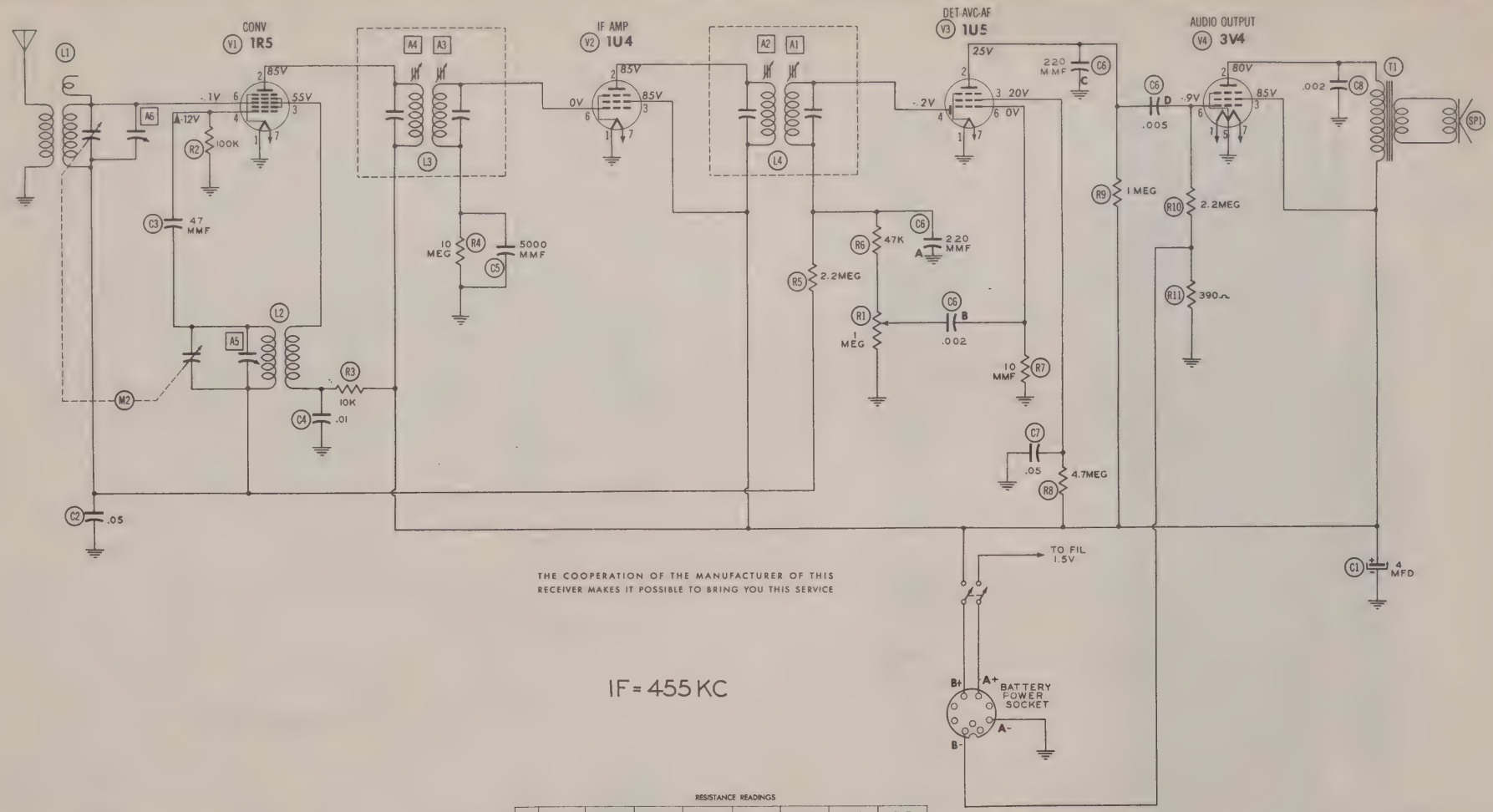


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



SILVERTONE
MODEL 2028 (Ch. 528.230)



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†20Ω	†10KΩ	100KΩ	0Ω	3.2Meg	*
V 2	1U4	0Ω	†20Ω	†0Ω	INF	0Ω	10Meg	*
V 3	1U5	0Ω	†1Meg	†4.7Meg	1Meg	INF	10Meg	*
V 4	3V4	*	†485Ω	†0Ω	INF	0Ω	2.2Meg	*

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 3 OF V4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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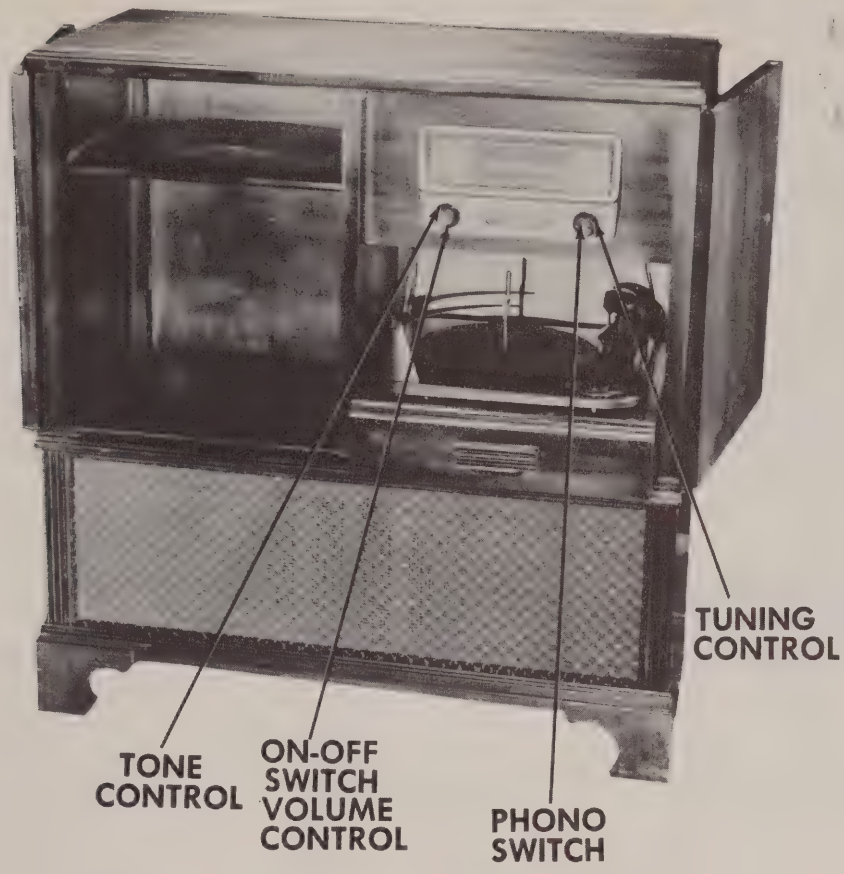
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODELS 2060, 2061 (Ch. 101.861, -1)



SILVERTONE
MODELS 2060, 2061 (Ch. 101.861, -1)

SILVERTONE MODEL 2061

TRADE NAME	Silvertone Models 2060, 2061 (Ch. 101.861, -1)
SUPPLIER	Sears, Roebuck & Co., 925 South Homan, Chicago, Illinois
TYPE SET	AC Operated Radio-Phono Combination AM Superheterodyne Receiver
TUBES (Eight)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AT6 Phase Inv., (2) 25L6GT Audio Output, 25Z6GT Rectifier
POWER SUPPLY	110-120 volts AC-60 Cycles RATING .45 Amp. @ 117 volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer turn tuning gang fully open and set pointer 3 1/4 inches from right hand edge of dial back plate.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to B-.	455KC (400∿Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6, A7	"

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT-SEE V-M MODEL 950, PHOTOFACT SET 107, FOLDER 13, OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF Amp.	6AT6	6AT6	7BT	
V5	Phase Inverter	6AT6	6AT6	7BT	
V6	Audio Output	25L6GT	25L6GT	7S	
V7	Audio Output	25L6GT	25L6GT	7S	
V8	Rectifier	25Z6GT	25Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTE
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲50	150	R41-77561-1	AFH4-01		DO29			R1306	
B	■50	150								
C	▬80	150								
C2	3.5		R43-74592-4							Note
C3	.047	200	R45-664732-1	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C4	100		R43-401010-21	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C5	.047	200	R45-664732-1	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C6	.01	400	R45-661032-1	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	100		R43-401010-21	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C8	.0022	400	R45-662222-1	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C9	.0047	400	R45-664722-1	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C10	.01	400	R45-661032-1	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C11	.01	400	R45-661032-1	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C12	.01	400	R45-661032-1	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C13	.01	400	R45-661032-1	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C14	.047	400	R45-664732-1	489ZX-05		PJ4S47		PT4147	4TM-S47	
C15	.1	400	R45-77212-1	P488-1		PTE4P1		PT401	4TM-P1	
C16	.1	400	R45-77212-1	P488-1		PTE4P1		PT401	4TM-P1	

*Note 1. Ch. 101.861-1 use 2MMF in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	R37-74577-1	QJ-434R *		SBBT-697-S	UF16A	Tone-Panel
B	2Meg	½					UR26-T25	Volume-Tapped @ 600KΩ-rear
C	Switch						US-26	Attach to R1B

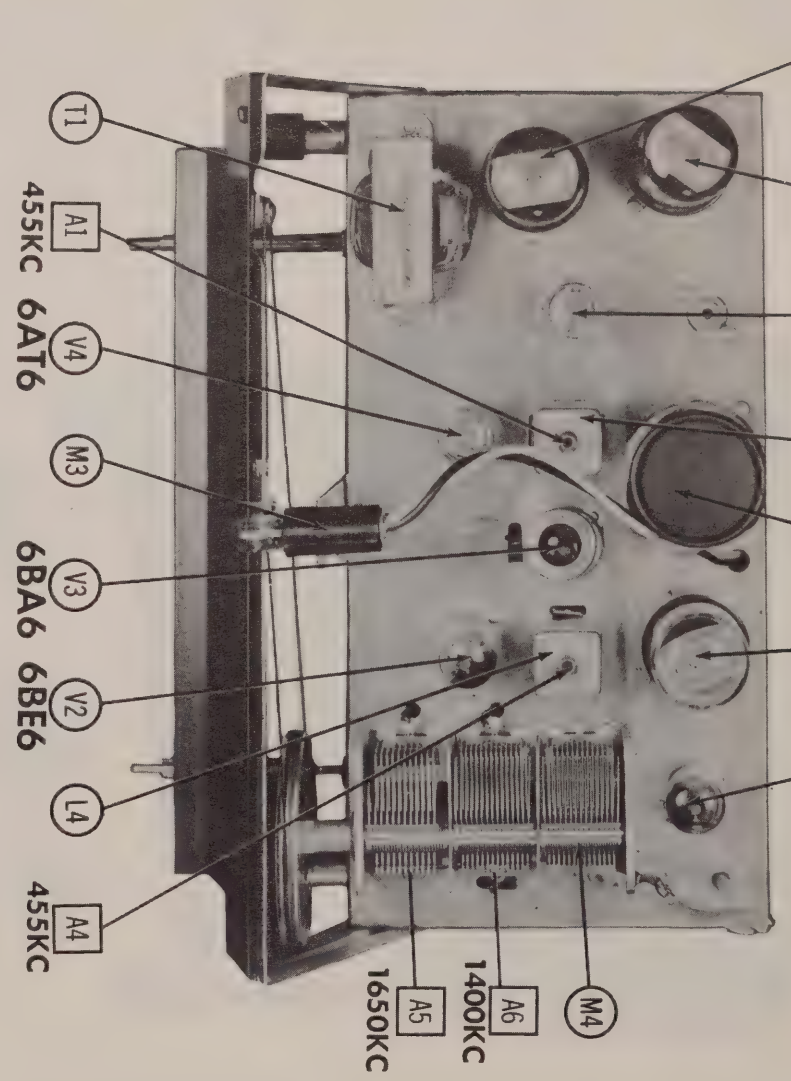
* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFT B13-137 & P1-212 (Panel), B13-139X & R2-226 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R2	22Ω	½	R35-332201-1		
R3	47Ω	½	R35-334701-1		
R4	22KΩ	½	R35-332231-1	BTS-22K	
R5	15Meg	½	R35-331561-1	BTS-15 Meg	
R6	2.2Meg	½	R35-332251-1	BTS-2.2Meg	
R7	47KΩ	½	R35-334731-1	BTS-47K	
R8	470KΩ	½	R35-334741-1	BTS-470K	
R9	47KΩ	½	R35-334731-1	BTS-47K	
R10	10Meg	½	R35-331061-1	BTS-10Meg	
R11	470KΩ	½	R35-334741-1	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R12	180KΩ	½	R35-331841-1	BTS-180K	
R13	82KΩ	½	R35-338231-1	BTS-82K	
R14	390KΩ	½	R35-333941-1	BTS-390K	
R15	68Ω	1	R35-436801-1		
R16	470KΩ	½	R35-334741-1	BTS-470K	
R17	560Ω	1	R35-435611-1	BTA-560	
R18	390Ω	1	R35-433911-1	BTA-390	
R19	5.1Ω	½	R36-62456-17		
R20A	17Ω	8	R36-77557-1		
B	17Ω				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	3.7KΩ CT	3.3Ω	262Ω CT	.59Ω	56-77556-1	A-3870①	A-2901	RO-302 ①	S-53X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	10"	PM	3.3Ω	12-74104-7	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	SILVERTONE PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	.5Ω	.5Ω	R27-77566-1			Includes back cover & trimmer Cap.
L2	RF Coil	.5Ω	2Ω	R50-77564-1			Pri. tapped @ .2Ω
L3	Osc. Coil	1.4Ω	7.8Ω	R50-77563-1	71-OSC *	14-1040 *	
L4	Input IF	19.5Ω	24Ω	R57-77562-1 †	12-C1	16-6758	
L5	Output IF	18Ω	19Ω	R57-77554-1 ■	12-C6	16-6770	

† Ch. 101.861-1 uses part #R57-78878-1 in this application.
■ Ch. 101.861-1 uses part #R57-78879-1 in this application.
* Drill mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		GC-AG-J	G-AG	WC36B	A56U	43	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-3AGS or W-3AGA	S-642 or S-652	

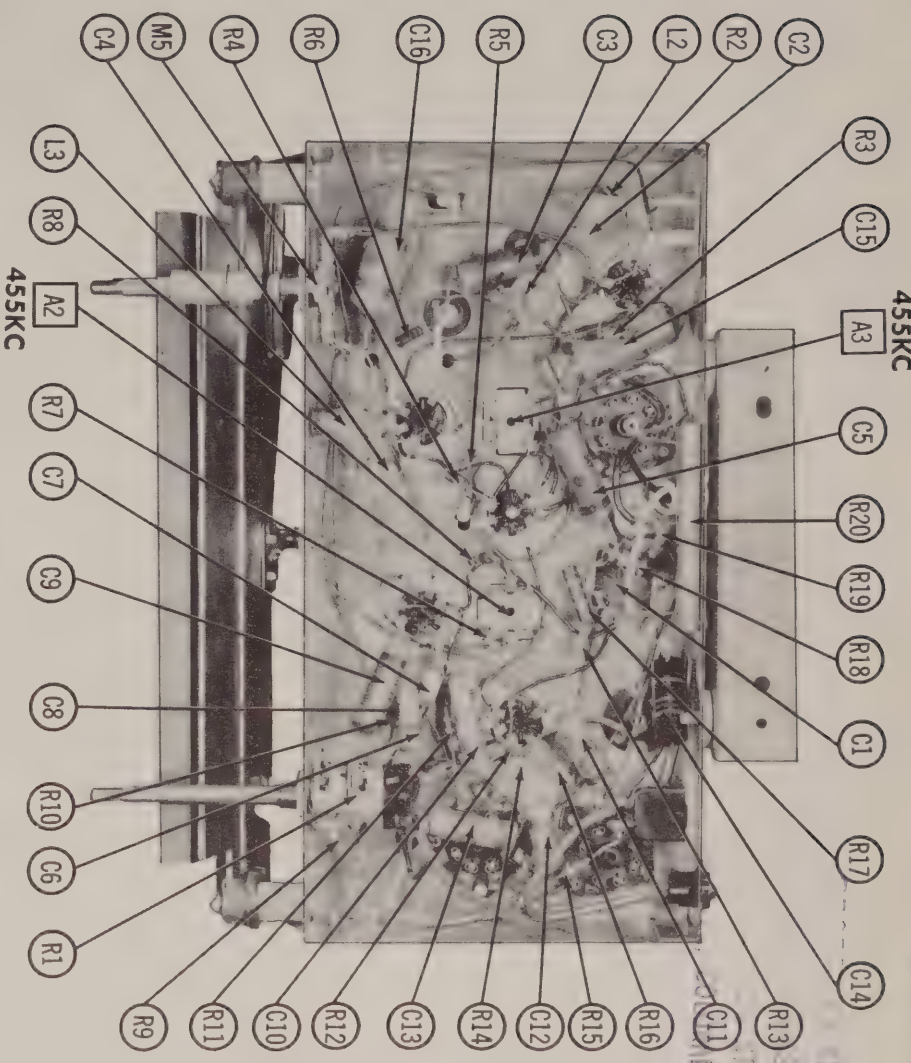
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					SILVERTONE PART No.		
M3	Bayonet	6-8	.15	Brown			Type #47

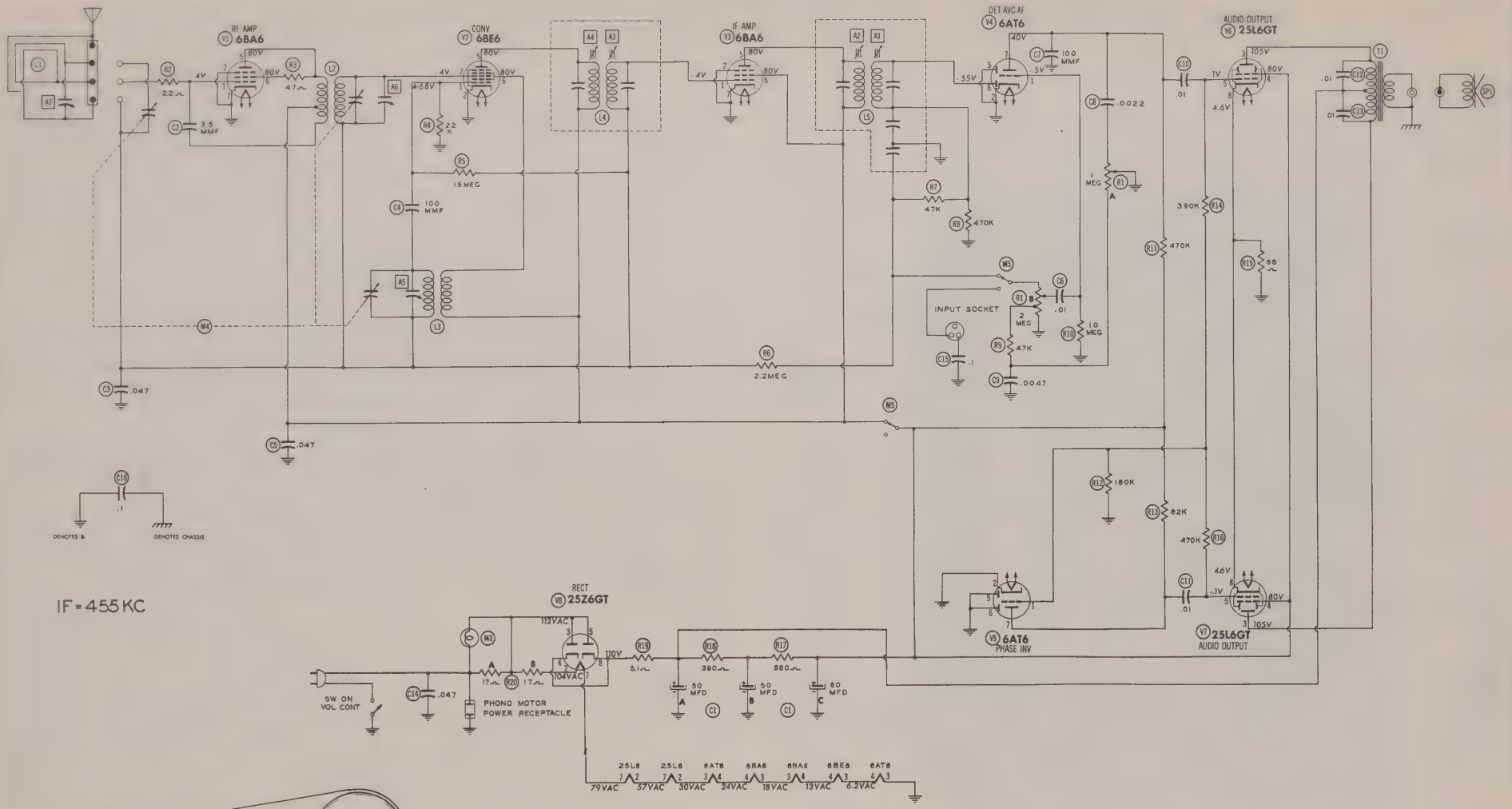
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Tuning Capacitor	R42-77558-1	35-472MMF, 35-472MMF, 25-170MMF
M5	Switch	R33-77559-1	Radio-Phono Selector
	Dial	R74-77596-1	
	Pointer	R74-74557-1	
	Escutcheon	R74-74555-2	
	Knob	R74-74753-1	Function Selector
	Knob	R74-74752-1	Off/On Volume
	Knob	R74-67965-2	Tuning, Tone (2 Used)

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 2060 (Ch. 101.861, -1)



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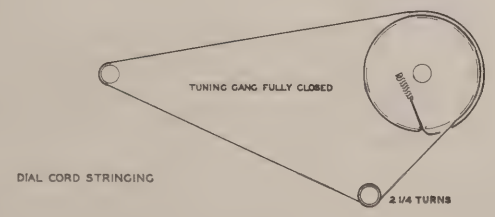

DIAL CORD STRINGING

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	2.7Meg	0Ω	12Ω	8Ω	†950Ω	†1KΩ ,	0Ω		
V 2	6BE6	22KΩ	0Ω	4Ω	8Ω	†950Ω	†950Ω	2.7Meg		
V 3	6BA6	2.7Meg	0Ω	12Ω	18Ω	†950Ω	†950Ω	0Ω		
V 4	6AT6	10Meg	0Ω	0Ω	4Ω	0Ω	450KΩ	†470KΩ		
V 5	6AT6	180KΩ	0Ω	20Ω	18Ω	0Ω	0Ω	†82KΩ		
V 6	25L6GT	INF	33Ω	†128Ω	†950Ω	570KΩ	INF	46Ω	68Ω	
V 7	25L6GT	INF	20Ω	†144Ω	†950Ω	650KΩ	†4.7Ω	33Ω	68Ω	
V 8	25Z6GT	INF	80Ω	77Ω	70KΩ	77Ω	0Ω	46Ω	†0Ω	

△ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 4 OF V8.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MODEL 3175

SILVERTONE
MODEL 3175 (Ch. 132.044)

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SILVERTONE
MODEL 3175 (Ch. 132.044)

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SILVERTONE
MODEL 3175 (Ch. 132.044)

TRADE NAME	Silvertone Model 3175 (Ch. 132.044)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Twenty-Four

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 2.1 Amp. @117 Volts
TUNING RANGE—Channels 2 thru 13 (VHF), 14 thru 83 (UHF) Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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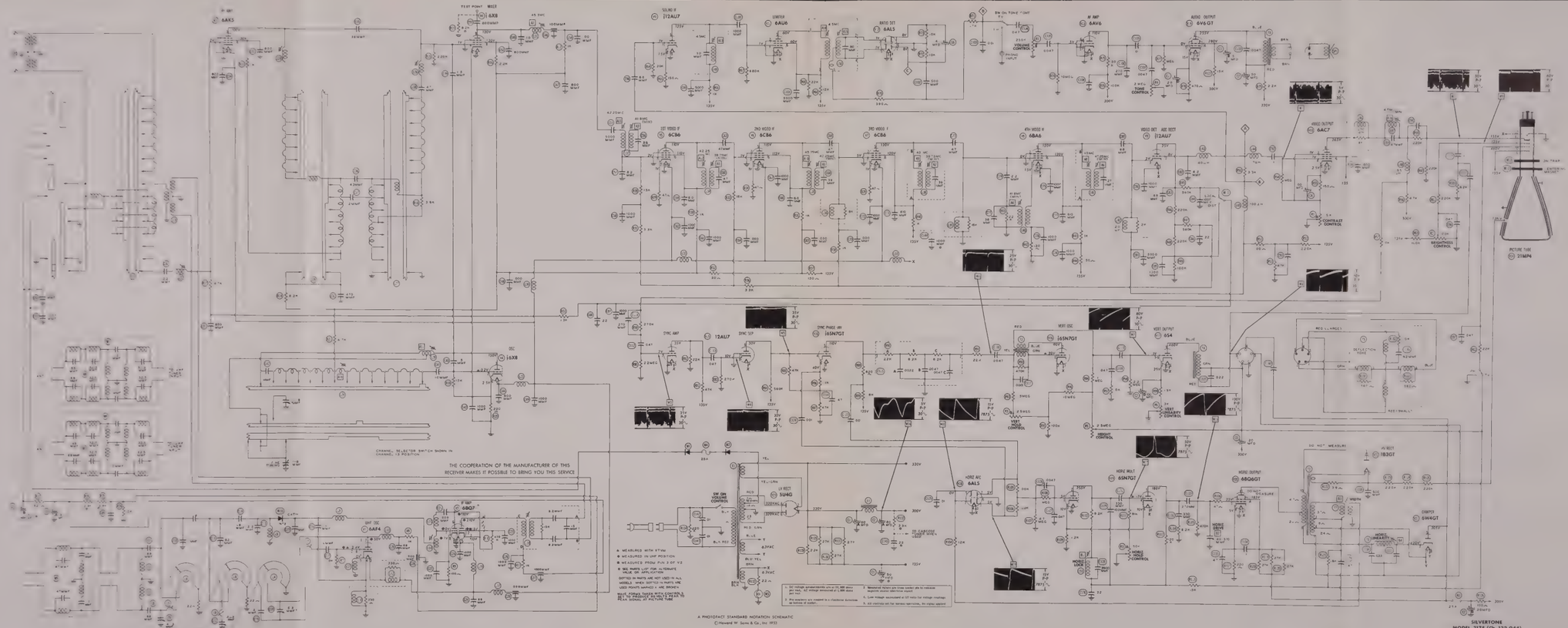
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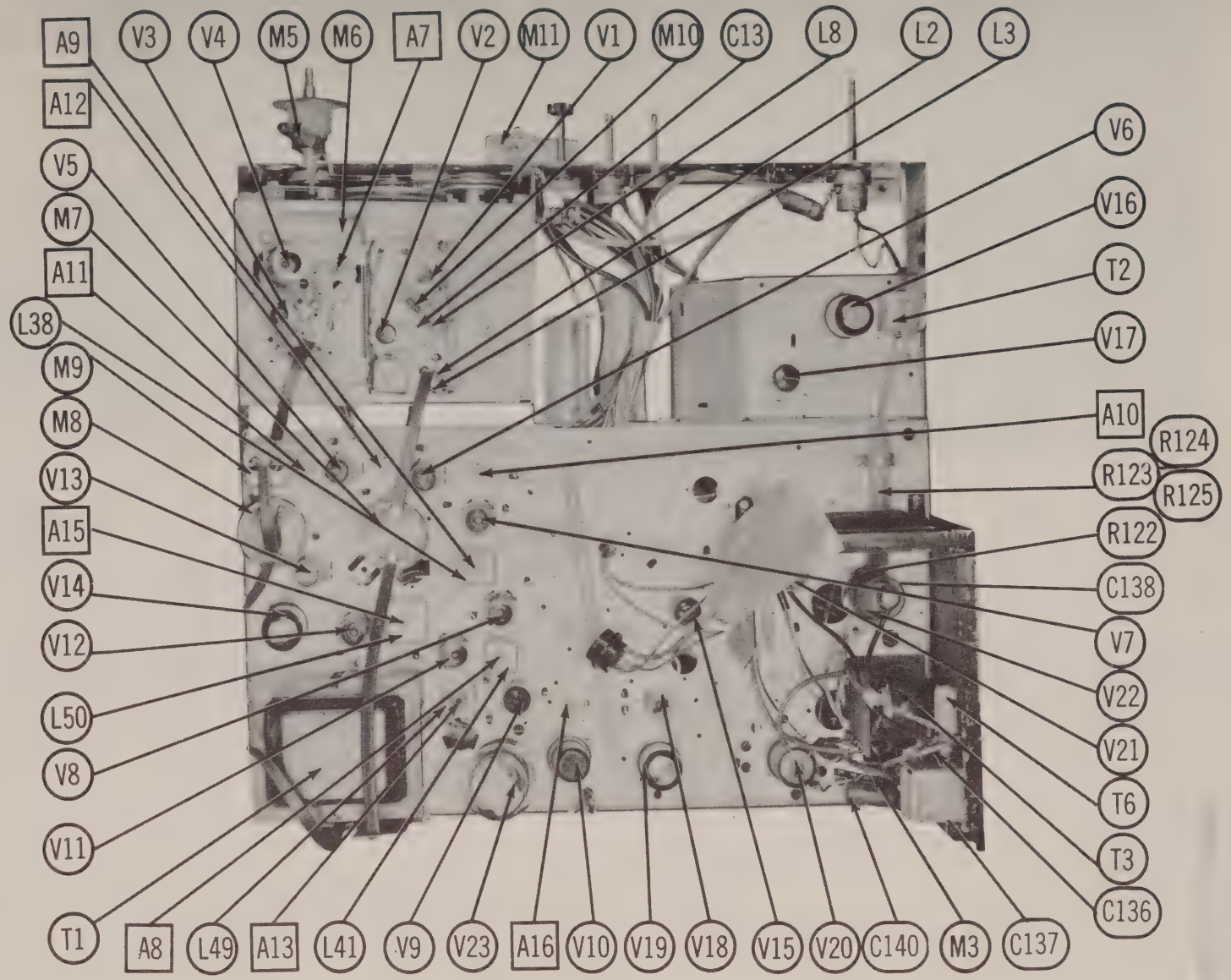
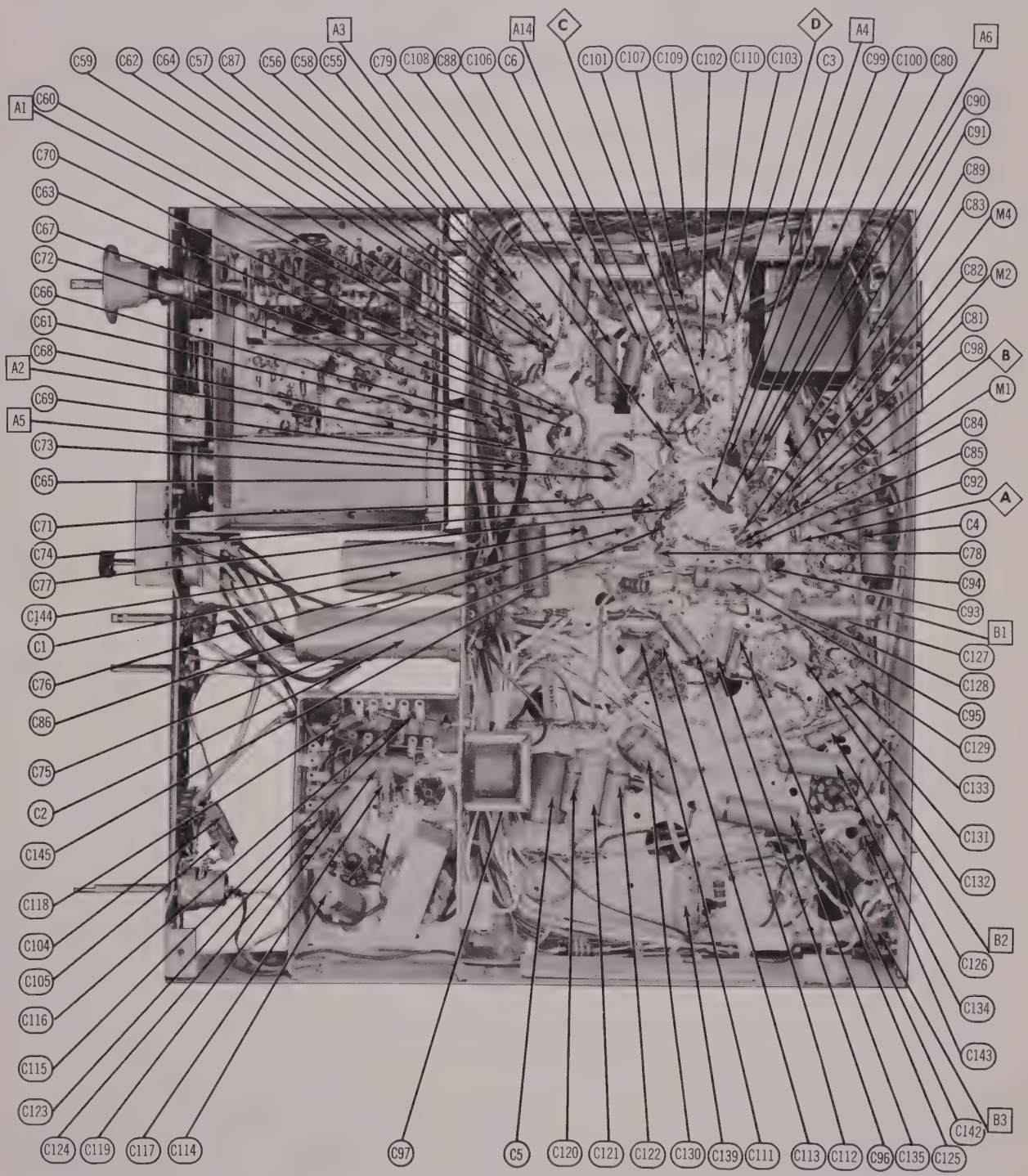
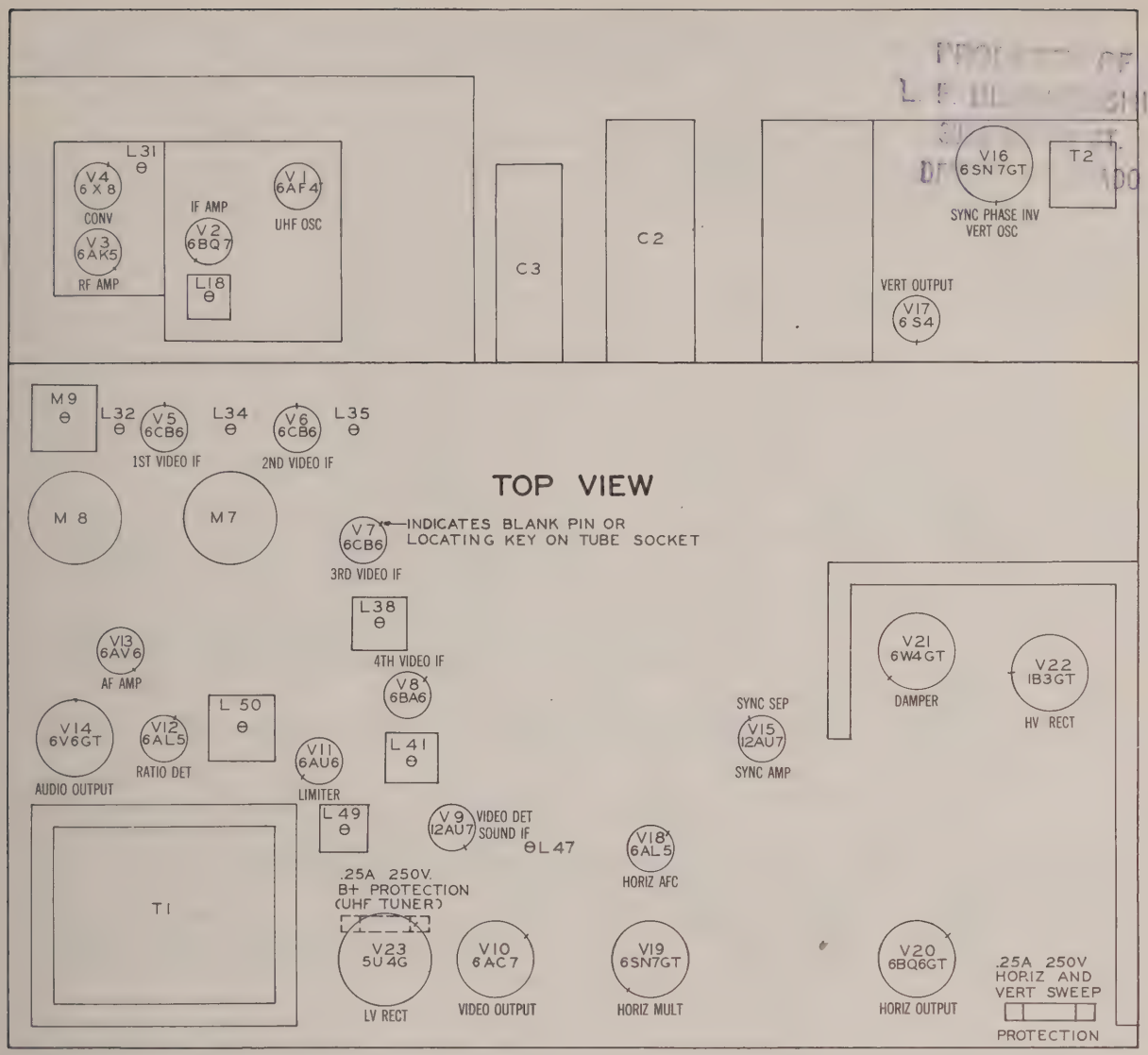


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V23

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V4, V5, V6, V7, V8, V9 (V1, Sel. Rect's M1, M2, Fuse M4 UHF Only)
No pic, no sound, has snow-V3, V4, V5
No pic, has sound, has raster-V10, V24
Has pic, no sound-V9, V11, V12, V13, V14

SYNC FAILURE
No vert. sync. -V16
No horiz. sync. -V16, V18, V19
No vert. or horiz. sync. -V15, V16

SWEEP FAILURE
No raster, has sound-V19, V20, V21, V22, V24 Fuse (M3)
No vertical deflection-V16, V17
Poor vert. linearity or foldover-V16, V17
Poor horiz. linearity or foldover-V19, V20, V21
Narrow picture-V19, V20, V21, V22, V23
Vert. off freq. -V16
Horiz. off freq. -V16, V18, V19

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal Multivibrator tube V19.

VIDEO IF ALIGNMENT

Set Local-Distance switch to local position. Connect the negative lead of a 3 volt battery to the junction of R46 and R48. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to tuner test point (on top of VHF tuner). Low side to chassis.	Not used	39.75MC	9, 10 or 11	Use VTVM. DC probe to point (A). Common to point (B).	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	"	41.6MC	"	"	A3, A4	"
3.	"	"	"	47.25MC	"	"	A5, A6	"
4.	"	"		45.3MC	"	"	A7	Start with core all the way in - tune outwards for maximum deflection.
5.	"	"	"	45.0MC	"	"	A8	Adjust for maximum deflection.
6.	"	"	"	43.1MC	"	"	A9	"
7.	"	"	"	45.75MC	"	"	A10	"
8.	"	"	"	42.25MC	"	"	A11, A12	"
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	41.6MC 42.25MC 42.75MC 45.0MC 45.75MC	10	Vert. Amp. of scope thru 18KΩ to point (A). Low side to chassis.		Use separate marker generator. Clip hot lead to chassis near V5. Check for response curve similar to Fig. 1. If necessary retouch A7 thru A12 for desired response.
10.	"	"	"	41.6MC	10	"	A4	Increase scope gain for expanded trace of 41.6MC trap region. Adjust A4 for response as in Fig. 2.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point (C). Common to chassis.	A13, A14	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to point (D). Common to chassis	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. to point (C). Low side to chassis.	A13, A14	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
12.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A15	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Remove 6AC7 (V10) from its socket. Connect a 200MMF capacitor from pin 8 to pin 4 of V10 socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.01MFD	High side to junction of R56 and R57. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point (C). Common to chassis.	A16	Adjust for MINIMUM deflection.

FIG. 1

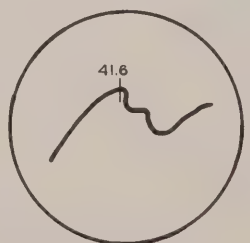


FIG. 2

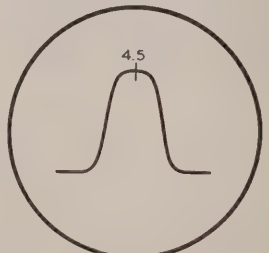


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Connect the bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
The RF and MIXER portion of this tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A17	Adjust to place sound marker in notch of response curve as in Fig. 5.
15.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check for sound marker placement as in Fig. 5. If necessary make compromise adjustment of A17 for any individual channel, then check all other high band channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
16.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A18	Adjust to place sound marker in notch of response curve as in Fig. 5.
17.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check for sound marker placement as in Fig. 5. If necessary make compromise adjustment of A18 for any individual channel, then check all other low band channels to see that they have not been seriously affected.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
						UHF TUNER		

The UHF tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

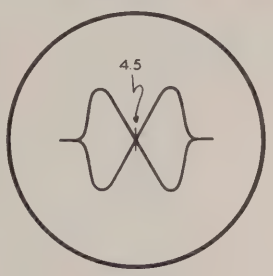


FIG. 4

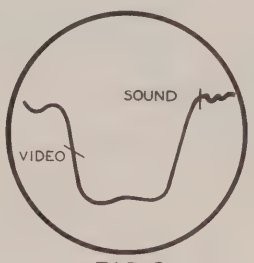
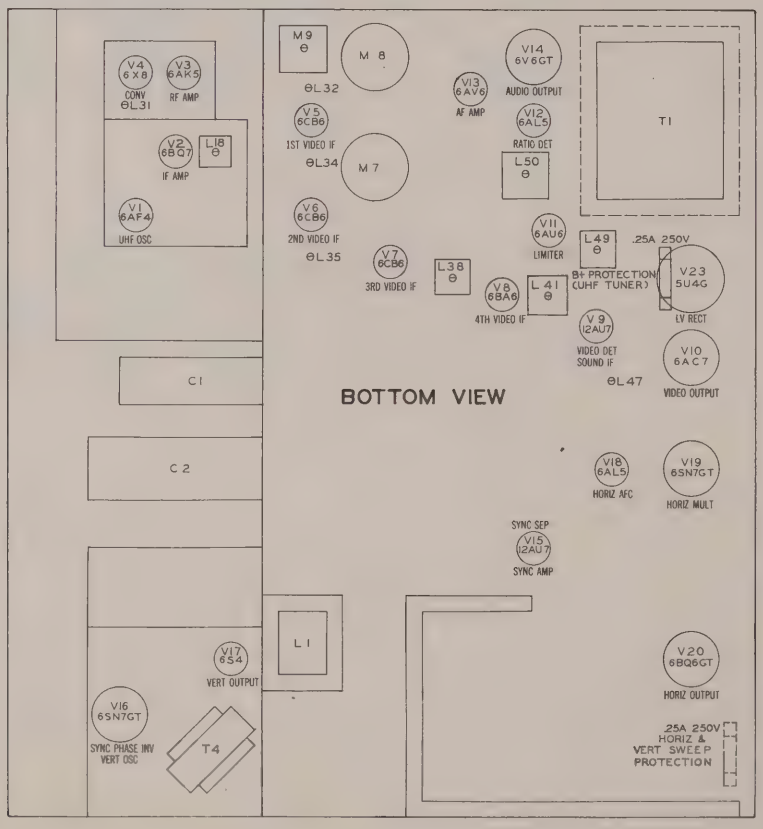


FIG. 5

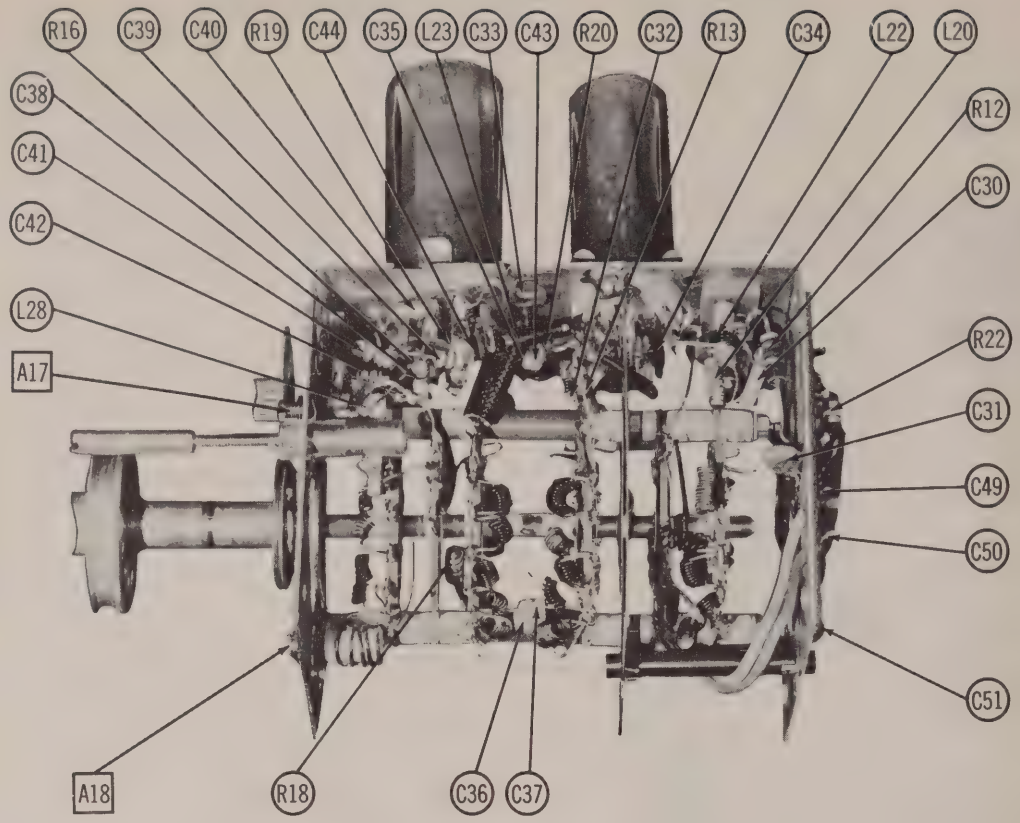
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	♦¶9KΩ	10KΩ	.1Ω	0Ω	0Ω	10KΩ	♦¶9KΩ		
V 2	6BQ7	♦¶1.8KΩ	INF	INF	0Ω	.1Ω	INF	0Ω	100Ω	0Ω
V 3	6AK5	■1 Meg	0Ω	.1Ω	0Ω	†10KΩ	†11KΩ	0Ω		
V 4	6X8	0Ω	15.2KΩ	†6.3KΩ	0Ω	.1Ω	220Ω	220KΩ	†4KΩ	†3KΩ
V 5	6CB6	900KΩ	47Ω	0Ω	.1Ω	†3.1KΩ	†3.1KΩ	0Ω		
V 6	6CB6	900KΩ	47Ω	0Ω	.1Ω	†2.9KΩ	†2.9KΩ	0Ω		
V 7	6CB6	900KΩ	47Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 8	6BA6	1.8Ω	0Ω	.1Ω	0Ω	†2.9KΩ	†2.9KΩ	120Ω		
V 9	12AU7	540KΩ	8.1KΩ	4.8KΩ	.1Ω	.1Ω	†2.8KΩ	120KΩ	150Ω	0Ω
V 10	6AC7	0Ω	0Ω	1KΩ	1 Meg	1.1KΩ	†1.8KΩ	.1Ω	†4.8KΩ	
V 11	6AU6	680KΩ	0Ω	.1Ω	0Ω	†10.5KΩ	†10.5KΩ	0Ω		
V 12	6AL5	10KΩ	10KΩ	0Ω	.1Ω	INF	0Ω	INF		
V 13	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†250KΩ		
V 14	6V6GT	INF	.1Ω	†2.5KΩ	†15KΩ	1 Meg	INF	0Ω	470Ω	
V 15	12AU7	†22KΩ	2.2Meg	0Ω	.1Ω	.1Ω	†62KΩ	0Ω	270KΩ	0Ω
V 16	6SN7GT	2.5Meg	‡2.8Meg	0Ω	52KΩ	†4.4KΩ	5.8KΩ	.1Ω	0Ω	
V 17	6S4	INF	2.1KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	‡3.4KΩ
V 18	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	12KΩ	0Ω	12KΩ		
V 19	6SN7GT	5.7Meg	‡25.3KΩ	1.2KΩ	110KΩ	‡135KΩ	1.2KΩ	0Ω	.1Ω	
V 20	6BQ6GT	INF	0Ω	INF	†9.2KΩ	470KΩ	INF	.1Ω	220Ω	Top Cap ‡26Ω
V 21	6W4GT	INF	INF	750KΩ	INF	†220Ω	INF	●0Ω	●.1Ω	
V 22	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ‡443Ω
V 23	5U4G	INF	18KΩ	INF	2IΩ	INF	23Ω	INF	18KΩ	
V 24	2IMP4	0Ω	270KΩ	Pin 6 †1.8KΩ	Pin 10 ‡24KΩ	Pin 11 ‡115KΩ	Pin 12 .1Ω			

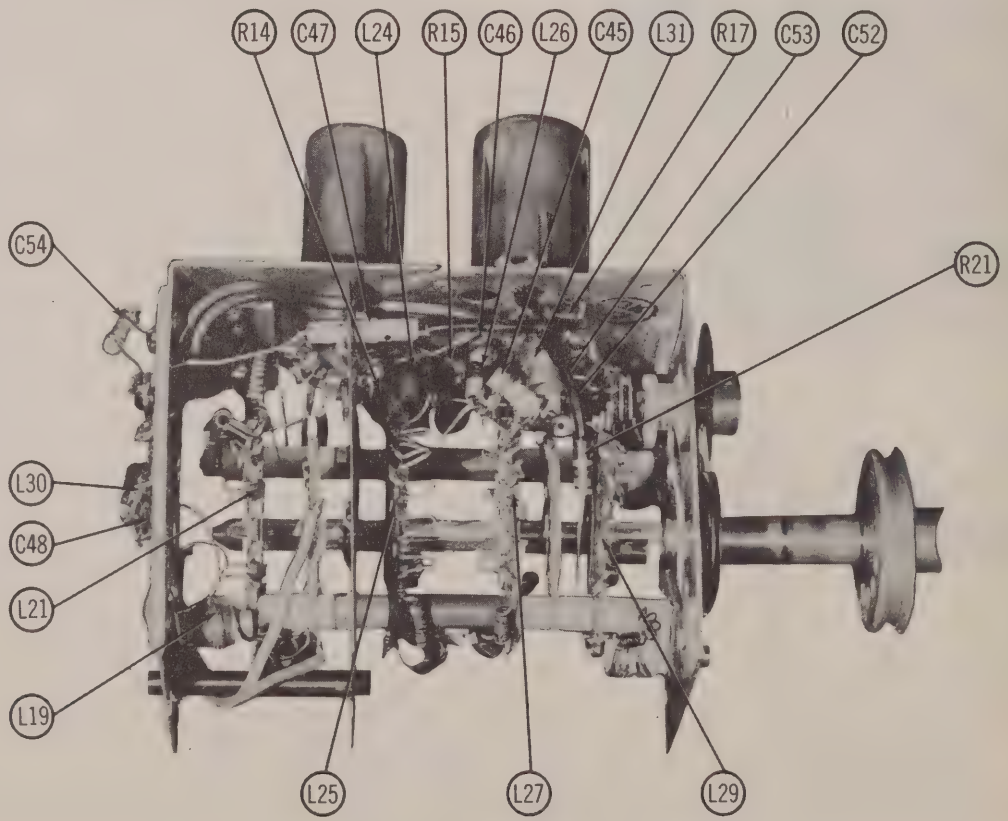
† MEASURED FROM PIN 8 OF V23
‡ MEASURED FROM PIN 3 OF V21
♦ MEASURED IN UHF POSITION
¶ MEASURED FROM M1
■ LOCAL-DISTANCE SWITCH IN LOCAL POSITION
● MEASURED FROM PIN 7 OF V21



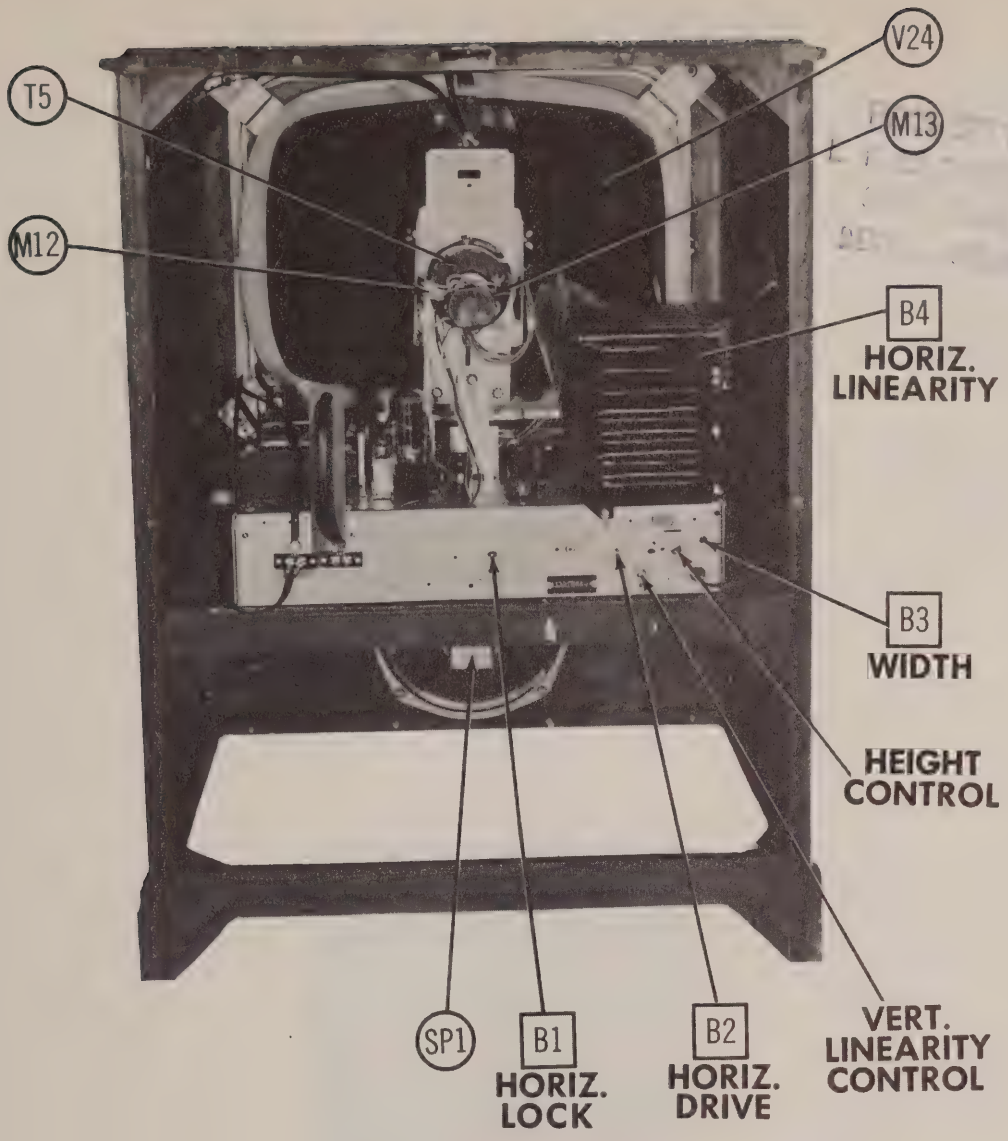
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the mid-point of its range and adjust the horizontal lock slug (B1) until the picture synchronizes horizontally.

Turn B1 clockwise until the picture loses sync, then counter clockwise until the picture just falls into sync. Turn the horizontal hold control fully counter clockwise and momentarily switch to another channel and back again. The picture should be out of sync. Note the number of diagonal bars present in the picture. Repeat the procedure with the horizontal hold in extreme clockwise rotation and again note the number of diagonal bars. There should be the same number for both positions of the horizontal hold. Adjust B1 for this condition.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of a vertical white line or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V19, V20 and V21. Check amplitude of signal at W13.

If Insufficient	If Sufficient
Check components of horizontal oscillator and coupling network between V19 and V20.	Check components of horizontal output tube and transformer.

DRIVE LINES

Substitute V20 and V21. Check coupling network between V19 and V20. Check T3 and associated components.

COMPRESSED AT LEFT SIDE

Check by substitution V20 and V21. Check components of shaping network between V19 and V20.

FOLDS

Substitute V21. Check associated components.

VERTICAL

LOSS OF SWEEP

Substitute V16 and V17. Check waveform at W7.

If Unsatisfactory	If Satisfactory
Check T2 and associated components. Check coupling network between V16 and V17.	Check R3B, T4 and T5B. Check associated components.

INSUFFICIENT SWEEP

If adjustment of both the height and vertical linearity controls fail to give sufficient height, follow procedure outlined under "Loss of Sweep".

COMPRESSED AT TOP

Substitute V10 and V17. Check signal at W7.

If Unsatisfactory	If Satisfactory
Check components of V16 and network between V16 and V17.	Check T4 and Yoke.

COMPRESSED AT BOTTOM

Substitute V17 and Check T4, C2D and C5.

WILD VERTICAL OSCILLATOR (Fig. 1)

Check C118 for open.

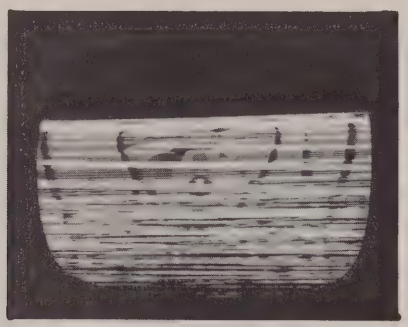


Fig. 1

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V15, V16, V18 and V19. Check L51 and other components associated with V18 and V19.

CRITICAL HOLD

Check by substitution V16, V18 and V19. Check horizontal discharge components. Check C131.

PULLING AND OUT OF PHASE

Check C127 for open.

VERTICAL

LOSS OF SYNC

Substitute V15 and V16. Check associated components especially the integrating network.

CRITICAL SYNC

Check by substitution, V15, V16 and V17. Check associated components.

TRIGGERING

Check filament lead dressing around vertical oscillator grid leads.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2A	IF Amplifier	6BQ7	6BQ7	9AJ	
B	IF Amplifier	6BZ7	6BZ7	9AJ	
V3	RF Amplifier	6AK5	6AK5	7BD	
V4	Converter	6X8	6X8	9AK	
V5	1st. Video IF Amp.	6CB6	6CB6	7CM	
V6	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V7	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V8	4th. Video IF Amp.	6BA6	6BA6	7BK	
V9	Video Detector-AGC Rectifier-Sound IF Amp.	12AU7	12AU7	9A	
V10	Video Output	6AC7	6AC7	8N	
V11	Limiter	6AU6	6AU6	7BF	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier	6AV6	6AV6	7BT	
V14	Audio Output	6V6GT	6V6GT	7S	
V15	Sync Amplifier-Sync Separator	12AU7	12AU7	9A	
V16	Sync Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6S4	6S4	9AC	
V18	Horiz. AFC	6AL5	6AL5	6BT	
V19	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA:	RTMA BASE TYPE	NOTES
V24	21MP4	21MP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■60	400	N22422-13	AFH4-88				FP431.4	TVL-4709	
B	▲5	450		PRS450/40				TC62		Note 1
C	▲50	350								
D	20	25								
C2A	■80	350	N22422-14	AFH3-182		CO37		FP420.6	TVL-4711	
B	▲20	450		PRS450/40		BRH501		TC75		
C	▲50	350								
D	100	50								
C3A	30	350		AFH2-39		BO31		FP227.3	TVL-2621	
B	30	350								Note 2
C4	100	25	N25454	PRS25/100		BRH251A		TC2501	TVA-1207	
C5	20	450	N25452	PRS450/20		BR2045A		TC75	TVA-1709	
C6	4	150	N25453	PRS150/4		BR415		TC40	TVA-1402	
C7	.68				TCZ-.68		NP0K-R68			
C8	.68				TCZ-.68		NP0K-R68			
C9	.4-3									
C10	1				TCZ-1		NP0K-010		5TCCB-V1	
C11	.82									
C12	.4-3									
C13	2.2				TCZ-2.2		NP0K-2R2		5TCCB-V22	
C14	1.8									
C15	1				TCZ-1		NP0K-010		5TCCB-V1	
C16	1.1									
C17	6									
C18	.5-3				829-3			CT565A		
C19	12									
C20	68			SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C21	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	68			SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C26	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	1000			CFC-001						
C28	1000			CFC-001						
C29	1000			CFC-001						
C30	22			SI22	D6-220		GP1K-220	UC-5422	5GA-Q22	
C31	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C32	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C33	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C34	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C35	.36									
C36	.43									
C37	1.2						NP0K-1R2			
C38	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C39	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C40	1.5						N330K-1R5			
C41	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C42	1				TCZ-1		NP0K-010		5TCCB-V1	
C43	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C44	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C45	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C46	100			BPD-0001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C47	800									
C48	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C49	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C50	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C51	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C52	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C53	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C54	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C55	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C56	36									
C57	8.2			SI8.2NP0	TCZ-8.2		NP0K-8R2		5TCCB-V82	
C58	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C59	610									
C60	47						N330K-470			
C61	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C62	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C63	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C64	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C65	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C66	610									
C67	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C68	39									
C69	47									
C70	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C71	310									
C72	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C73	47									
C74	3.2									
C75	35									
C76	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C77	310									
C78	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C79	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C80	68									
C81	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C82	8.2			SI8.2NP0	TCZ-8.2		NP0K-8R2		5TCCB-V82	
C83	68			BPD-000068	D6-680		GP1K-680	UC-5468	5GA-Q68	
C84	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C85	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C86	.22	200		P488-22		PTE4P22		PT4025	4TM-P22	
C87	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C88	.22	200		P488-22		PTE4P22		PT4025	2TM-P22	
C89	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C90	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C91	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C92	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C93	47			SI47NP0	TCZ-47		NP0K-470		2T-5447	5TCC-Q47
C94	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C95	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C96	.047	400		P488-047	D6-503	PTE4S47		PT4147	4TM-S47	
C97	.047	600		P688-047	D6-503	PTE6S47		PT6147	6TM-S47	
C98	68									
C99	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C100	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C101	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C102	500	500		1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C103	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C104	.047	200		P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C105	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C106	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241	1FM-33	
C107	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C108	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C109	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C110	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C111	270	500		1469-0003		5R5T3		MCB241	MS-33	
C112	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C113	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C114	.47	400		484-5		PTE4P5		PT405	4TM-P47	
C115A	.002			P688-0022		PTE6D22		PT6222		
B	.0047		◆N24166	P688-0047	◆PC-100	PTE6D47	◆1405-01	PT6247	◆101C1	
C	.0047			P688-0047		PTE6D47		PT6247		
C116	.0047	600		1464-005		1DR5D5		MCB465	MS-25	
C117	.0015	600		P688-0015	D6-152	PTE6D15	GP2L-152	PT6215	6TM-D15	
C118	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C119	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C120	.022	200		P488-022		PTE4S22		PT4122	4TM-S22	
C121	.1	1000		1084-1		PTE10P1		PT1601	MB-P1	
C122	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C123	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C124	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C125	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C126	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C127	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C128	3900	500		1464-004		1DR5D4		MCB463	MS-24	
C129	100	500		1469-0001		5R5T1		MCB235	MS-31	
C130	.22	600		648-25		PTE6P25		PT6025	6TM-P25	
C131	330	500		1469-0C335						
C132	330	500								
C133	270	500		1469-0003		5R5T3		MCB241	MS-33	
C134	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C135	.47	200		P288-47		PJ2P5		PT405	2TM-P47	
C136	.033	600		P688-033		PTE6S33		PT6233	6TM-S33	
C137	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C138	500	20000		HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C139	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C140	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C141	82	2000								
C142	.01	600		6892X-01		PJ6S1		PT611	6TM-S1	
C143	.01	600		6892X-01		PJ6S1		PT611	6TM-S1	
C144	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	Note 3
C145	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	Note 3

Note 1. C1C not used on all Models.
Note 2. Some Model use 40MFD in this application (C3 part #N22422-15)
Note 3. Not used in all Models.
◆ Itmes C115A, C115B, C115C, R90A, R90B, R90C are combine d in one unit.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	N22464-27	QJ-349*	RTV-352		UF152L †	Contrast- Panel
B	250KΩ	½					UR254L †	Volume-Rear
C	Switch						UR-26	Attach to R1B
R2A	100KΩ	½	N22464-40	QJI-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	50KΩ	½	N22464-42	QJ-426**			UF54L	Horiz. Hold-Panel
B	2.5Meg	½					UR36L	Vert. Hold-Rear
R4A	2 Meg	½	N22464-19					Tone & TV-Phono SW-Note
R5A	2.5Meg	½	N22464-43	QJI-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	3000Ω	½	N22464-41	QJI-112	AG-15-S	AB-8	U-5	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

† UNIVERSAL REPLACEMENT (Mallory Exact Duplicate Part No. 133S)
* CONCENTRIKIT EQUIVALENT - KIT K-3, BASE ELEMENTS & SHAFTS B17-110 & P1-204 (Panel)
B13-130 & R1-220 (Rear) & SWITCH 76-1.
** CONCENTRIKIT EQUIVALENT -KIT K-2, BASE ELEMENTS & SHAFTSB11-123 & P9-112 (Panel)
B11-239 & R12-122 (Rear).
Note. Some models use alternate control (Part No. N22464-35).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	NOTES
R7	10KΩ	½			
R8	1000Ω	½		BTS-1000	
R9	100Ω	½		BTS-100	
R10	470KΩ	½		BTS-470K	
R11	1000Ω	½		BTS-1000	
R12	4700Ω	½		BTS-4700	
R13	1000Ω	½		BTS-1000	
R14	8200Ω	1			
R15	220KΩ	2		BTS-220K	
R16	2200Ω	2		BTS-2200	
R17	1000Ω	2		BTS-1000	
R18	3900Ω	2		BTS-3900	
R19	15KΩ	½			
R20	220Ω	½		BTS-220	
R21	4700Ω	½		BTS-4700	
R22	3300Ω	½		BTS-3300	
R23	8200Ω	2		BTS-8200	Note 1
R24	10KΩ	2		BTB-10K	
R25	3900Ω	2		BTB-3900	Note 2
R26	3900Ω	2		BTB-3900	Note 2
R27	820Ω	1		BTA-820	
R28	15KΩ	½			
R29	47Ω	½			
R30	1000Ω	½		BTS-1000	
R31	3300Ω	½		BTS-3300	
R32	150Ω	½		BTS-150	
R33	18KΩ 5%	½			
R34	47Ω	½			
R35	1000Ω	½		BTS-1000	
R36	3300Ω	½		BTS-3300	
R37	150Ω	½		BTS-150	
R38	1000Ω	½		BTS-1000	
R39	47Ω	½			
R40	1000Ω	½		BTS-1000	
R41	22KΩ	½		BTS-22K	
R42	120Ω	½		BTS-120	
R43	1000Ω	½		BTS-1000	
R44	150Ω	½		BTS-150	
R45	560KΩ	½		BTS-560K	
R46	220KΩ	½		BTS-220K	
R47	560KΩ	½		BTS-560K	
R48	220KΩ	½		BTS-220K	
R49	100KΩ	½		BTS-100K	
R50	33000Ω 5%	½		BTS-3300 5%	
R51	100Ω	½		BTS-100	
R52	220KΩ	½		BTS-220K	
R53	4700Ω	½		BTS-4700	
R54	1Meg	½		BTS-1Meg	
R55	150Ω	½		BTS-150	
R56	47000Ω 5%	2		BTB-4700 5%	
R57	10KΩ	½		BTS-10K	
R58	270KΩ	½		BTS-270K	
R59	220KΩ	½		BTS-220K	
R60	220KΩ	½		BTS-220K	
R61	220KΩ	½		BTS-220K	
R62	22KΩ	½		BTS-22K	
R63	100KΩ	½		BTS-100K	
R64	120KΩ	½			
R65	150Ω	½		BTS-150	
R66	1000Ω	½		BTS-1000	
R67	680KΩ	½		BTS-680K	
R68	12KΩ	1		BTA-12K	
R69	22KΩ	2		BTB-22K	
R70	390Ω 5%	½		BTS-390 5%	
R71	47KΩ	½		BTS-47K	
R72	10KΩ 5%	½		BTS-10K 5%	
R73	10KΩ 5%	½		BTS-10K 5%	
R74	10Meg	½		BTS-10Meg	
R75	150KΩ	½		BTS-150K	
R76	100KΩ	½		BTS-100K	
R77	1Meg	½		BTS-1Meg	
R78	470Ω	1		BTA-470	
R79	2200Ω	2		BTB-2200	
R80	2.2Meg	½		BTS-2.2Meg	
R81	47KΩ	1		BTA-47K	
R82	22KΩ	½		BTS-22K	
R83	270KΩ	½		BTS-270K	
R84	560KΩ	½		BTS-560K	
R85	47KΩ	½		BTS-47K	
R86	1100Ω 5%	½		BTS-1100 5%	
R87	4700Ω	½		BTS-4700	
R88	820Ω	½		BTS-820	
R89	1800Ω	½		BTS-1800	
R90A	22KΩ	½		BTS-22K	
B	8200Ω	½	◆N24166	BTS-8200	
C	8200Ω	½		BTS-8200	
R91	22KΩ	½		BTS-22K	
R92	470KΩ	½		BTS-470K	
R93	1.5Meg 5%	½		BTS-1.5Meg 5%	
R94	1Meg 5%	½		BTS-1Meg 5%	
R95	100KΩ	½		BTS-100K	
R96	10Meg	½		BTS-10Meg	
R97	10KΩ	½		BTS-10K	
R98	2.2Meg	½		BTS-2.2Meg	
R99	1500Ω	½		BTS-1500	
R100	560Ω	½		BTS-560	
R101	560Ω	½		BTS-560	
R102	10KΩ	½		BTS-10K	
R103	8200Ω	½		BTS-8200	
R104	12KΩ	½		BTB-12K	
R105	100KΩ 5%	½		BTS-100K 5%	
R106	100KΩ 5%	½		BTS-100K 5%	
R107	4.7Meg	½		BTS-4.7Meg	
R108	1Meg	½		BTS-1Meg	
R109	1200Ω	½		BTS-1200	
R110	8200Ω	1		BTA-8200	
R111	91KΩ 5%	½		BTS-91K 5%	
R112	120KΩ	1		BTS-120K	
R113	15KΩ	1		BTA-15K	
R114	8200Ω	½		BTS-8200	
R115	470KΩ	½		BTS-470K	
R116	47Ω	½			
R117	220Ω	5		1 3/4A-225	
R118	27KΩ	2		BTB-27K	
R119	27KΩ	2		BTB-27K	
R120	27KΩ	2		BTB-27K	
R121	1800Ω	2		BTB-1800	
R122	3.8Ω	½			
R123	220KΩ	2			
R124	220KΩ	2			
R125	220KΩ	2			
R126	100Ω	5			
R127	15KΩ	½		BTS-15K	
R128	2200Ω	20		2D-2250	
R129	27KΩ	2		BTB-27K	
R130	27KΩ	2		BTB-27K	
R131	27KΩ	2		BTB-27K	
R132	22Ω	½			
R133	3300Ω	1		BTA-3300	
R134	220KΩ	½		BTS-220K	

Note 1. Not used in all Models.
Note 2. Some Models use two resistors in parallel to obtain desired value.
◆ Items R90A, R90B, R90C, C115A, C115B, C115C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117V AC @ 2.1A	670V CT, 280ADC tap @ 230V, .030ADC	5V AC @ 3A	6.3V AC @ 1.2A SEC. 4 6.3V AC @ 8.3A	N-25696					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	190Ω	1050Ω	N-22446-1	A-8122 ①	A-4003	TBO-3 ①	A-97Y	208T9	Vert. Osc. Trans.
T3	437Ω	36Ω tap @	N-24989		HVO-9 ②	TFB-13	D-19	225T1	Horiz. Output Trans.
	tap @ 20Ω	3.7Ω, 1.7Ω, .3Ω,7Ω							
		SEC. 2 0Ω							
T4	1560Ω tap @ 4.2Ω		N-24990-1	A-8141	A-3039	TSO-12	A-104X	226T1	Vert. Output Trans.
T5A	24Ω		N-24807	DY-11A ③		TY-7 ③	Y-19 ③		Horiz. Deflection Coils
B	46Ω								Vert. Deflection Coils
T6	5.7Ω		N-40028			WC-12	209R1		Horiz. Lin. Coil
	tap @ 1.4Ω								
T7	11Ω		N-40027						Width Coil

① Drill one new mounting hole.
② Connect linearity coil in plate circuit
③ Use original Horiz. Deflection Coil network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	4.5KΩ	3.4Ω	300Ω	.4Ω	-24776-1	A-3849	A-3019	RO-9 ①	S-5X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.4Ω	-25519	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	MILLER PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	RF Choke	.2Ω						
L3	RF Choke	.2Ω						
L4	UHF Ant., Mixer & Osc. Coils	0Ω						
L5	UHF Ant. Coil End Inductor	0Ω						
L6	UHF Mixer Coil End Inductor	0Ω						
L7	UHF Osc. Coil End Inductor	0Ω						
L8	Parasitic Choke	0Ω						
L9	UHF IF Coupling Coil	0Ω						
L10	Fil. Choke	0Ω						Wound on 330Ω resistor
L11	Cathode Choke	0Ω						
L12	Fil. Choke	0Ω						Wound on 330Ω resistor
L13	RF Choke	0Ω						
L14	UHF IF Input Coil	0Ω						Tapped
L15	Feedback Coil	0Ω						
L16	Fil. Choke	.2Ω						
L17	Fil. Choke	.2Ω						
L18	UHF IF Output Coil	.1Ω						Includes 15KΩ resistor, two 8.2MMF capacitors and one 15MMF capacitor
L19	UHF IF Coupling Trans.	.2Ω CT	0Ω					Pri. tapped
L20	VHF Ant. Trans.	0Ω CT	0Ω					Low Channel Secondary -0Ω
L21	Ant. Coils	0Ω						
L22	Ant. Coil	0Ω						Channel 13
L23	Fil. Choke	0Ω		N22456				
L24	RF Coil	0Ω						Channel 13
L25	RF Coils	0Ω						
L26	Mixer Grid Coil	0Ω						Channel 13
L27	Mixer Grid Coils	0Ω						
L28	Osc. Plate Coil	0Ω CT						Channel 13
L29	Osc. Coils	0Ω						
L30	Fil. Choke	.2Ω					CL-1	.56 Microhenry
L31	Conv. Plate	.2Ω						
L32	1st. Video IF	0Ω		N25410		17-4500		Includes trap
L33	Fil. Choke	0Ω		N23095	4604			1.44 Microhenries
L34	2nd. Video IF	.1Ω		N25411		17-4501		Includes trap
L35	3rd. Video IF	.1Ω		N25412		17-4502		Includes trap
L36	RF Choke	1.8Ω		N22500-19				20 Microhenries, wound on 18KΩ resistor
L37	Fil. Choke	0Ω		N23095	4604			1.44 Microhenries
L38	4th. Video IF	.1Ω		N25413		17-4503		Includes trap
L39	RF Choke	1.8Ω		N22500-19				20 Microhenries, wound on 18KΩ resistor
L40	Cathode Trap	0Ω	0Ω	N25415	6219			
L41	5th. Video IF	.1Ω		N25474		17-4504		Includes Trap
L42	RF Choke	1.8Ω		N22500-8				20 Microhenries, wound on 12KΩ resistor

SILVERTONE
MODEL 3175 (Ch. 132.044)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MILLER PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L43	Series Peaking Coil	2.2Ω		N25468-6	6176	19-3036	40 Microhenries
L44	Series Peaking Coil	.2Ω		N25916	6175	19-3001	1.7 Microhenries
L45	Shunt Peaking Coil	3.7Ω		N25468-5	6177	19-3093	100 Microhenries
L46	Series Peaking Coil	6.5Ω		N25468-8	6181 †	19-3250 †	250 Microhenries, wound on 16KΩ resistor
L47	4.5MC Trap	1.6Ω		N25609	1470	20-1004	
L48	Shunt Peaking Coil	5Ω		N25468-1	6180	19-3180	185 Microhenries
L49	Sound IF	2Ω		N25543	1470-A ■		
L50	Ratio Det.	3.6Ω	.3Ω CT	N25322	1468	17-1033	Tertiary Winding - 1.55Ω
L51	Horiz. Osc.	60Ω		N23449	6210	19-1576	

† Parallel with 16KΩ resistor
■ Add 30MMF capacitor externally.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA SILVERTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.030	N25967	NA5	8J1	1214B ①	6S35	35
M2	.030	N25967	NA5	8J1	1214B ①	6S35	35

① Install tie points for mounting of rectifier

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA SILVERTONE PART No. FUSE	SILVERTONE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG P/T	1/4A 250V.	N22493		318.250 (3AG-1/4A-P/T)		GJV 1/4	
M4	3AG P/T	1/4A 250V.	N22493		318.250 (3AG-1/4A-P/T)		GJV-1/4	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SILVERTONE PART No.		NOTES
M5	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M6	RF Tuner	25267-5	VHF and UHF Assy.
M7	Trap	N40364	Band Elimination (UHF Antenna)
M8	Trap	N40364	Band Elimination (VHF Antenna)
M9	Trap	N25963	IF-FM (VHF Antenna)
M10	Crystal Diode		UHF Converter (1N72)
M11	Switch	N25525	Local-Distance
M12	Centering Magnet	N25626	
M13	Ion Trap	N25662-1	
B2	Trimmer Capacitor		Horiz. Drive, 40-370MMF
	Door, Controls	N25981	
	Door, Bracket	N25980	
	Safety Glass	N25967	
	Mask	N25968	
	Bezel	N40529	
	Cover, Cabinet Rear	N25991-3	
	Disk	N25095	UHF Indicator
	Knob	N40543-1	Channel Selector
	Knob	N25935-1	Contrast
	Knob	N25094-1	Fine Tuning
	Knob	N40542-1	Off/On Volume
	Knob	N24699-2	Tone (TV-Phono)

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check adjustment of 4.5MC trap (A16). Check local oscillator adjustment and video IF alignment.

POOR RESOLUTION

Check video IF alignment. If alignment cannot be brought within tolerance, substitute video IF tubes and check circuit components.

SMEAR

Substitute V9 and V10. Check associated components, particularly the peaking coils.

ONE WIDE BLACK BAR

Check tuner, Video IF, detector and video amplifier tubes for heater to cathode leakage.

POOR CONTRAST

Check signal at W2.

If Insufficient	If Sufficient
Substitute IF and video amplifier tubes. Check associated components.	Check picture tube and grid circuit components.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V11, V12, V13 and V14. Check alignment of ratio detector and sound IF stages. Check video IF alignment.

BUZZ

Adjust ratio detector secondary for minimum buzz. If still noticeable, substitute V12 and readjust.

DISTORTED

Check audio amplifier stages V13 and V14 using audio signal generator and scope.

If Undistorted	If Distorted
Check adjustment of ratio detector and sound IF stages. Check video IF alignment.	Check components of amplifier stage where distortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V19, V20, V21 and V22. Check 1/4 amp. fuse located in high voltage cage. Check waveform at W13.

If Unsatisfactory	If Satisfactory
Check components of horizontal oscillator.	Check T3, T6, T7 and other components of horizontal output stage. Check high voltage filter network.

WEAK HIGH VOLTAGE

Substitute V19, V20, V21, V22 and V23. Follow procedure outlined under loss of high voltage.

BLOOMING

Substitute V20, V21, V22 and V23. Check high voltage filter. Check picture tube.

POWER

SMALL RASTER, WEAK SOUND

Substitute V23. Check B plus circuit for shorts. Check line voltage.

DIM PICTURE

Measure B plus.

If Low	If Normal
Check for shorts or leaky capacitors.	Check boost B plus circuit. Check picture tube.

GENERAL

NO PICTURE, NO SOUND, NO SNOW

Check by substitution V3, V4, V7, V8 and V9. Check associated components.

WEAK PICTURE, NO SOUND

Substitute V5 and V6. Check associated components.

SOUND, BUT NO PICTURE

Substitute V10 and check components.

INTERMITTANT STREAKS

Check high voltage circuit for corona discharge and arcing.

The Trouble - Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector , fine tuning and UHF selector knobs.

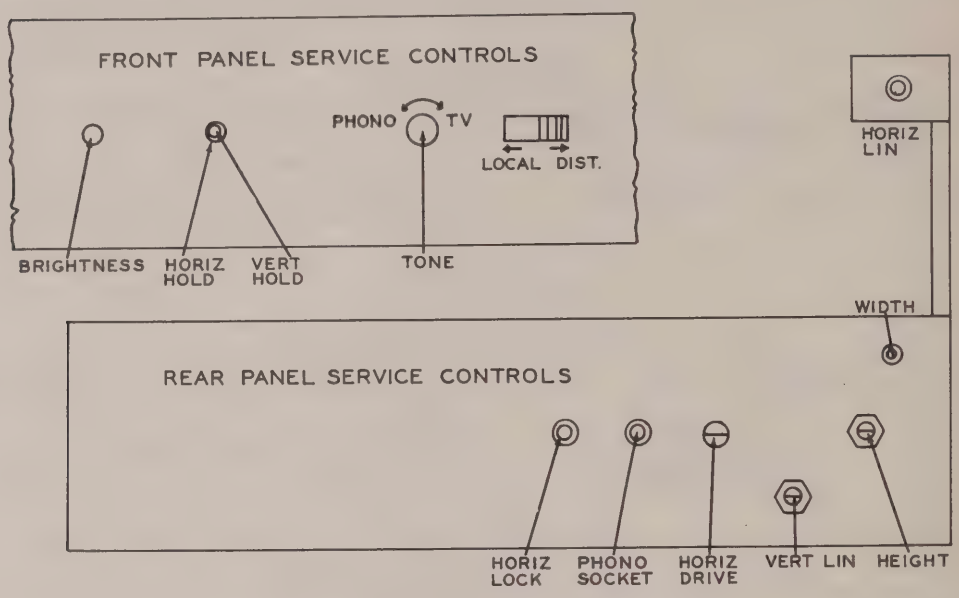
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 6 metal screws holding metal frame around safety glass. Remove frame and safety glass (hold glass in during this operation). Use extreme caution when removeing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis (see disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal lock slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary (L50) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for Horiz. Sweep Circuit protection and one UHF B plus protection. (For location, see tube placement chart).

CENTERING

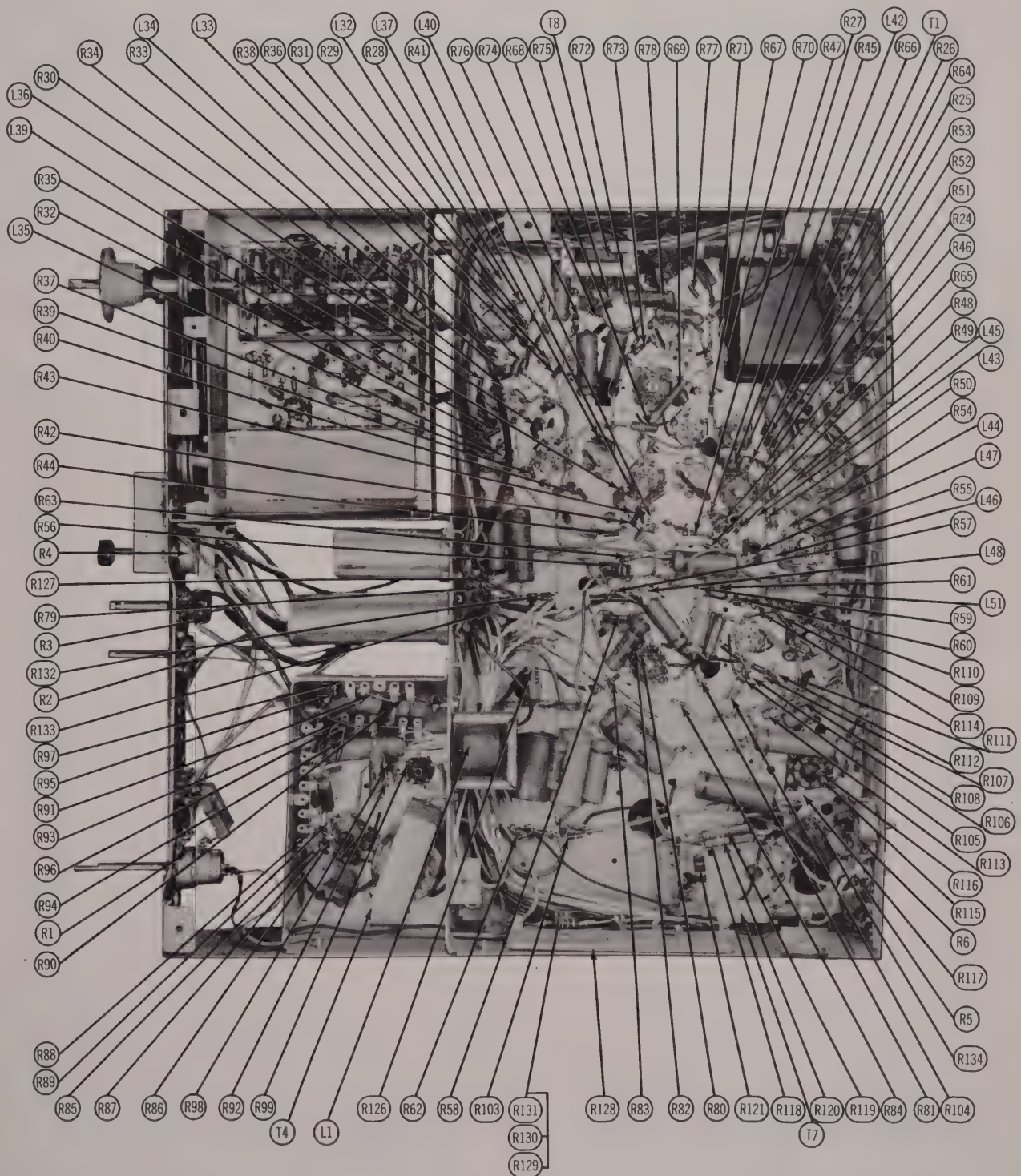
Centering is accomplished mechanical by adjusting a magnetic ring around the neck of picture tube located flush against the yoke. Turn the knurled knob and at the same time rotate the ring around the tube until picture is properly centered.

BUILT-IN ANTENNA TUNING

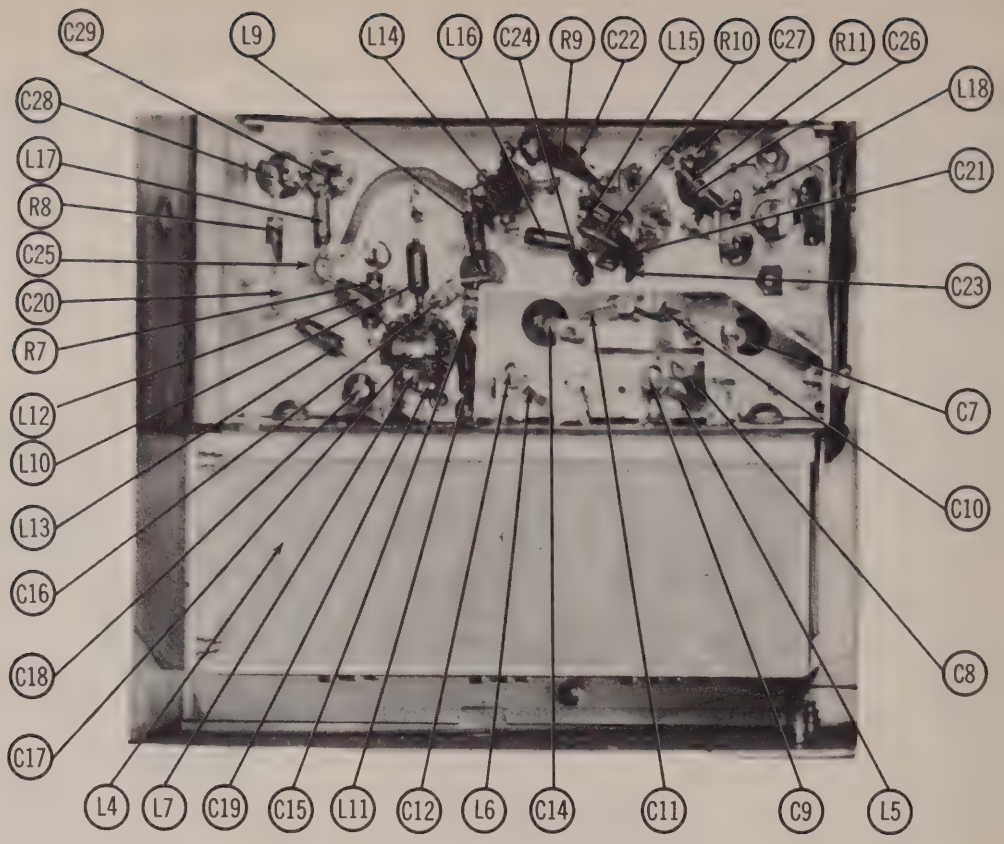
Built-in antenna can be adjusted from rear of the cabinet.. Adjust for a picture of maximum contrast and minimum ghost.

DISASSEMBLY INSTRUCTIONS

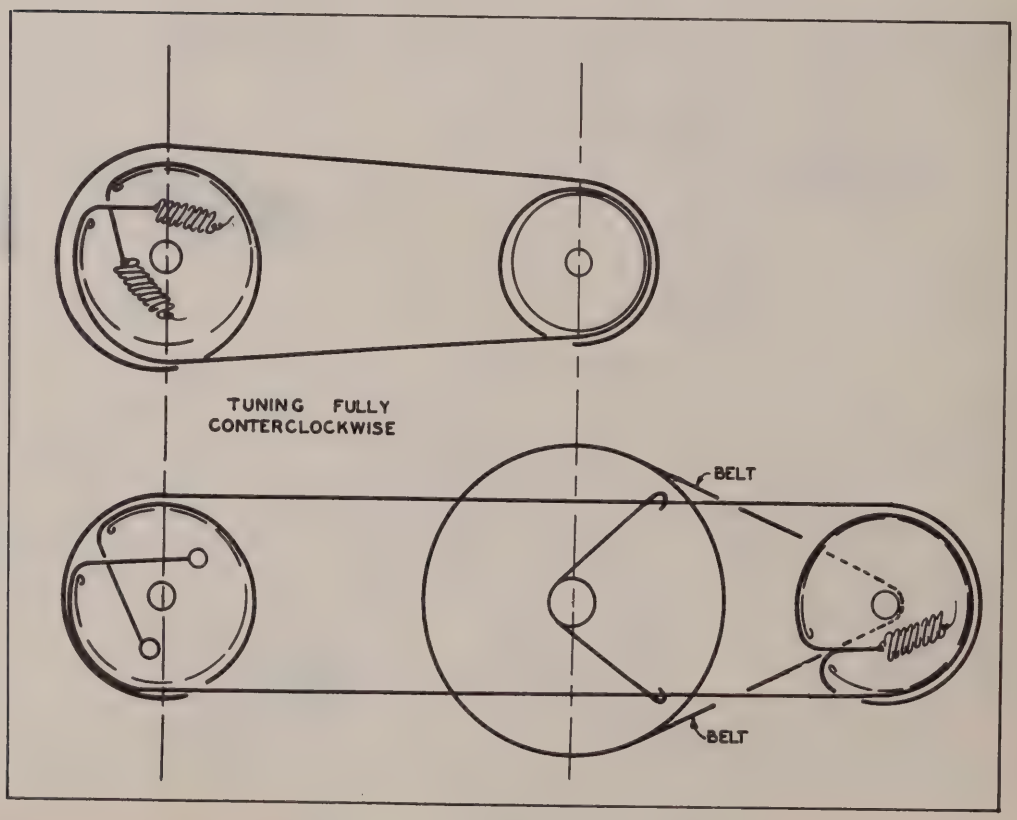
1. Remove 4 push on type control knobs from front panel. Note: Fine tuning knob has a "C" clamp in front and a spring behing.
2. Remove 4 wood screws. Remove rear cover.
3. Disconnect built-in antenna, yoke plug, speaker plug, HV lead and CRT socket.
4. Remove 1 metal screw connecting chassis and yoke bracket.
5. Remove 6 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



UHF TUNER–BOTTOM VIEW



DRIVE CORD STRINGING

TELE KING
MODEL RK-41 (Ch. RD-1)

TELE KING
MODEL RK-41 (Ch. RD-1)

TRADE NAME	Tele King Model RK41 (Ch. RD-1)
MANUFACTURER	Tele King Corp., 601 W. 26th.St., New York 1, N.Y.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Four)	Types 12BE6 Conv., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A3	"
3.	100MMF	To antenna lug on antenna coil (disconnect antenna hank). Low side to B-.	1500KC	Tune to 1500KC signal	"	A4	Adjust for maximum output. Repeat steps 2 and 3 for optimum results.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TELE KING
MODEL RK41(Ch. RD-1)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		TELEKING PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V3	Audio Output	50C5	50C5	7CV	
V4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TELE KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	CET-13	PRS150/50-30		EDL5315		2N520	TVA-2450	Yellow Red
B	50	150								
C2	.05	200	CP-2-15	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	220		CC-322	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C4	.005	400	CP-2-25	P688-005	D6-502	PTE6D5	811-005	PT625	6TM-D5	
C5	.01	400	CP-4-11	P488-01	D6-103	PTE4S1	811-01	PT411	4TM-S1	
C6	.02	400	CP-4-12	P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C7	.022	600	CP-6-122	P688-022	DD-203	PTE6S22		PT6122	6TM-S22	
C8	.05	400	CP-4-15	P488-05		PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TELEKING PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	P-23	Q13-137	AG-63-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

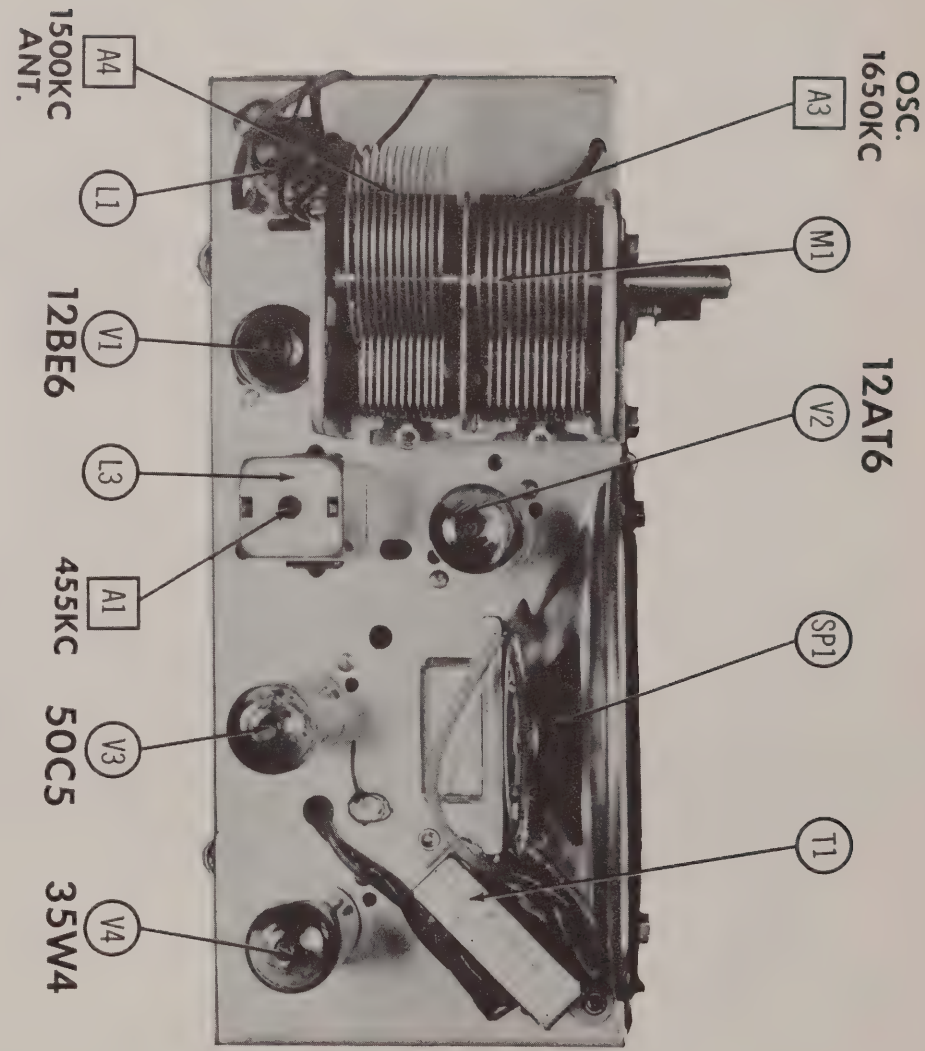
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TELEKING PART No.	IRC PART No.	
R2	22KΩ	½	RC-223-2	BTS-22K	
R3	1 Meg	½	RC-105-2	BTS-1 Meg	
R4	6.8Meg	½	RC-685-1	BTS-6.8Meg	
R5	270KΩ	½	RC-274-1	BTS-270K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TELEKING PART No.	IRC PART No.	
R6	470KΩ	½	RC-474-1	BTS-470K	
R7	18Ω	½	RC-180-2		
R8	1800Ω	1	RC-182-4	BTA-1800	
R9	39Ω	1	RC-390-5		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TELEKING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.2KΩ	3.7Ω	226Ω	.75Ω	T-127	A-3332	A-3025	RO-2 ①	S-2X ①	①Drill one new mtg. hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TELEKING PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.7Ω	RMS-7 (RL-108E-9)	ST-113 Mod. P4-X	4A-7	

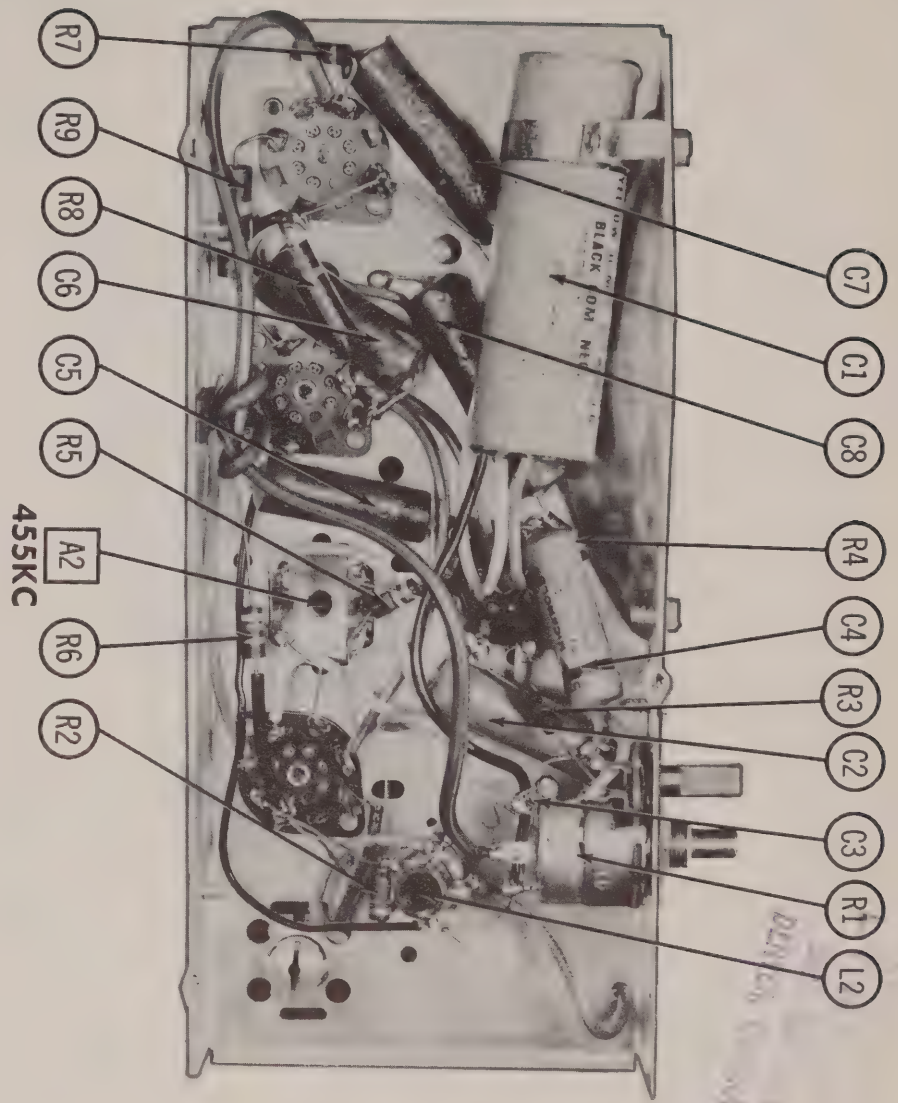
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	TELEKING PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Ant. Coil	70Ω	3Ω	TLA-5	72-A	14-1026	
L2	Osc. Coil	.8Ω	6Ω	LO-5			
L3	IF Trans.	19.5Ω	19.5Ω	LIF-12	12-C2	16-6758	

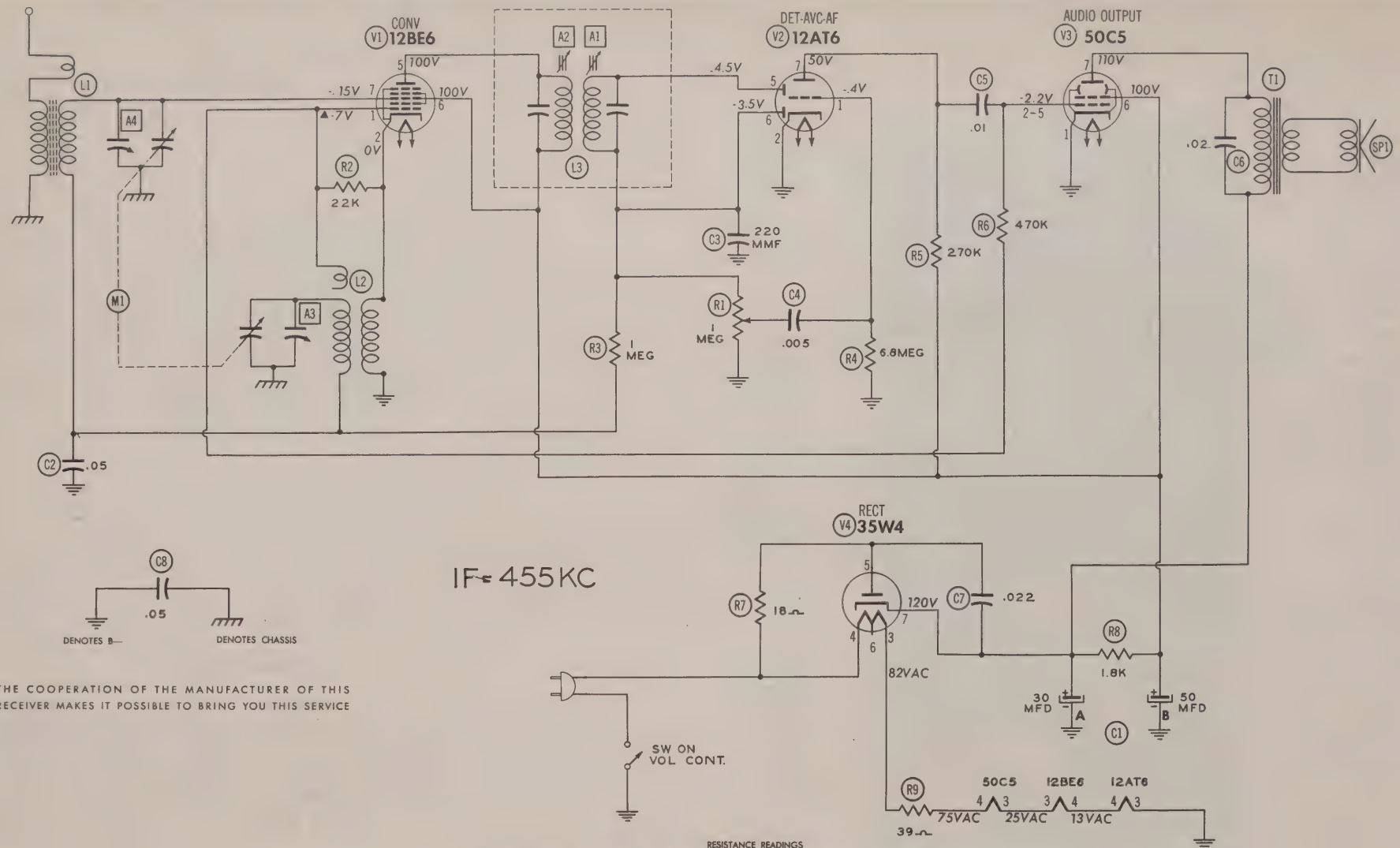
MISCELLANEOUS

ITEM No.	PART NAME	TELEKING PART No.	NOTES
M1	Tuning Capacitor	CV-4	25-390MMF, 26-170MMF

CHASSIS—BOTTOM VIEW



TELE KING
MODEL RK41 (Ch. RD-1)



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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	24Ω	12Ω	†1.8KΩ	†1.8KΩ	2 Meg
V 2	12AT6	6.8Meg	0Ω	0Ω	12Ω	1 Meg	1 Meg	†270KΩ
V 3	50C5	0Ω	490KΩ	24Ω	74Ω	490KΩ	†1.8KΩ	†226Ω
V 4	35W4	†0Ω	INF	113Ω	148Ω	166Ω	141Ω	500KΩ

† MEASURED FROM PIN 7 OF V4.
▲ MEASURED WITH VACUUM TUBE VOLTMETER

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203-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRUETONE MODEL D-3120A

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1 39
DENVER, COLORA

TRUETONE MODEL D-3120A

TRUETONE MODEL D-3120A

TRADE NAME	Truetone Model D-3120A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC/DC (or) 7½ volts DC "A" Supply & 90 volts DC "B" Supply
RATING	.16 Amp. @ 117 volts AC (or) 50MA @ 7½ volts DC & 14MA @ 90 volts DC
TUNING RANGE--BROADCAST	540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer turn tuning gang fully closed and set right hand edge of pointer plate even with last index dot at right hand end of pointer rail.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~Mod)	1000KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1620KC	Tuning gang fully open	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE
MODEL D-3120A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	150	8C-16068						R1308	
B	■40	150								
C	200	10								
D	▲50	25								
C2	220		8G-14459	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C3	.05	200	8D-14460	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	.25	100	8D-18042						68P24	
C5	.02	200	8D-17268		DF-203				5HK-S2	
C6	.02	200	8D-17268		DF-203				5HK-S2	
C7A	100		♦201-15005	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		
C8	5000		8D-17785	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C9A	50			SI50		TM5Q5		UC-545		
B	.005		†201-14083	BPD-005	†PC-90	TM5D5	†1407-01	DC-525	†103C3	
C	.002			BPD-002		TM5D2		DC-522		
C10	.005	200	8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C11	.047	400	8J-16081	489ZX-05		PJ4147		PT4147	4TM-S47	
C12	.09	400	8D-11251							

♦ Items C7A, C7B, R10 are combined in one unit.
† Items C9A, C9B, C9C, R12A, R12B, R12C are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	A-10A-19596-1	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume-Note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

Note . Some models may use alternate control ' '(Part No. A-10A-19596).

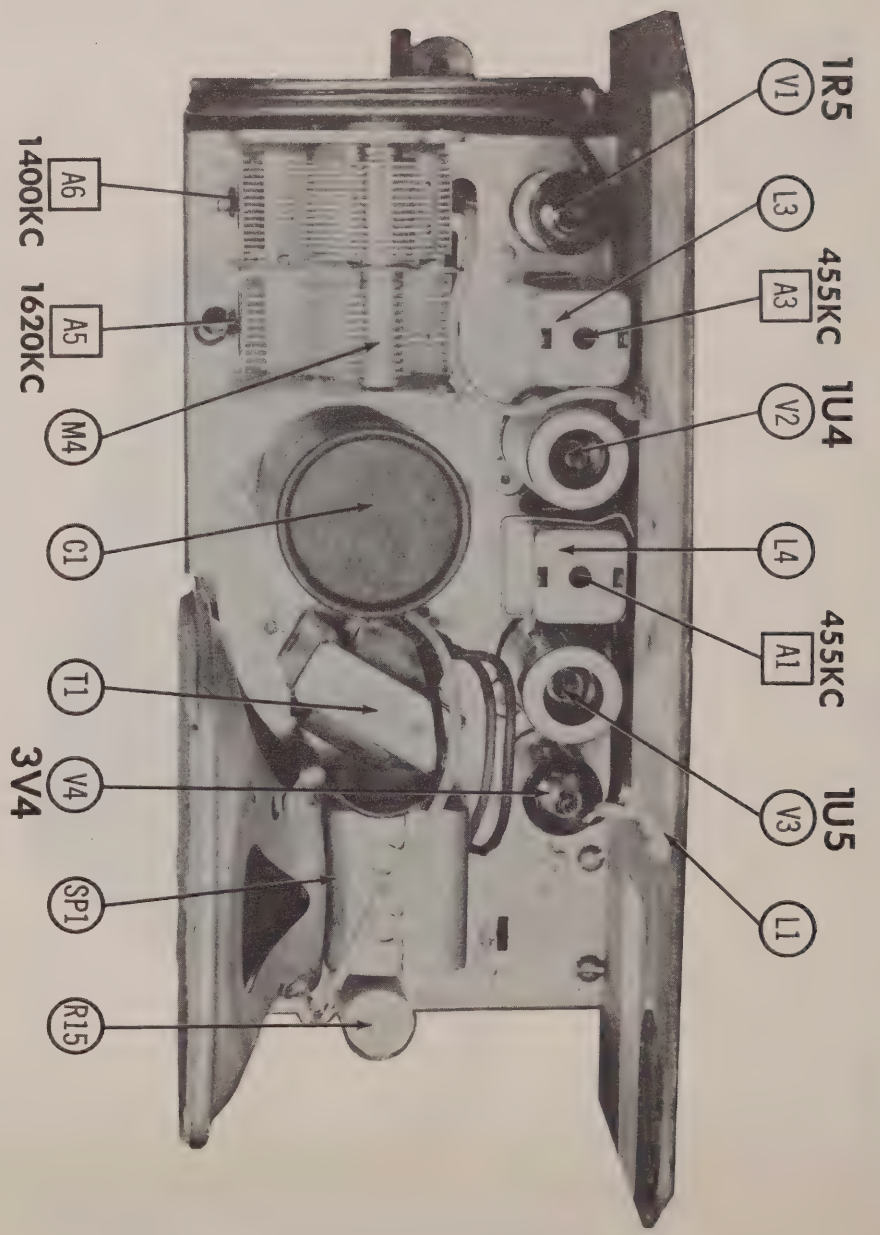
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	3.3Meg	½	9B1-104	BTS-3.3Meg	
R3	3.3Meg	½	9B1-104	BTS-3.3Meg	
R4	100KΩ	½	9B1-86	BTS-100K	
R5	22KΩ	½	9B1-78	BTS-22K	
R6	3.3Meg	½	9B1-104	BTS-3.3Meg	
R7	6.8Meg	½	9B1-108	BTS-6.8Meg	
R8	380Ω	½	9B1-155	BTS-680	
R9	680Ω	½	9B1-155	BTS-680	
R10	47KΩ	½	♦201-15005	BTS-47K	
R11	10Meg	½	9B1-37	BTS-10Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R12A	4.7Meg	½	†201-14083	BTS-4.7Meg	
B	1Meg	½		BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R13	1000Ω	½	9B1-159	BTS-1000	
R14	30Ω	2	9C-19770		
R15	2800Ω	10	9M-19833	1 3/4A-3000	
R16	2700Ω	1	9B2-169	BTA-2700	
R17	47KΩ	½		BTS-47K	Note
R18	220KΩ	½		BTS-220K	

Note: Not used in all Models.
♦ Items R10, C7A, C7B are combined in one unit.
† Items R12A, R12B, R12C, C9A, C9B, C9C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	6.2KΩ	3.3Ω	472Ω	.42Ω	12C19591	A-3329	A-2927 ①	RO-301 ①	S-8X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	18A19586	ST-105 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	TRUETONE PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.2Ω		13E-19844			
L2	Osc. Coil	2Ω	5.6Ω	13D-19595			
L3	Input IF	18.5Ω	19.5Ω	13B-17397	12-C1	16-6758	
L4	Output IF	18.5Ω	19.5Ω	13B-17397	12-C2	16-6758	

SELENIUM RECTIFIER

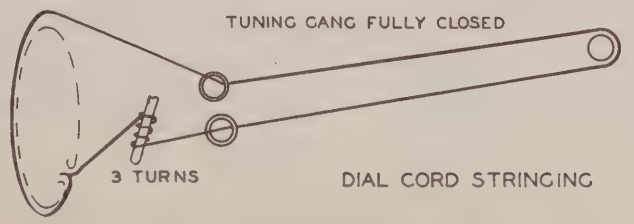
ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	TRUETONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.060ADC	21J19615	NA5	8J1	1002A	6S65	65

BATTERIES

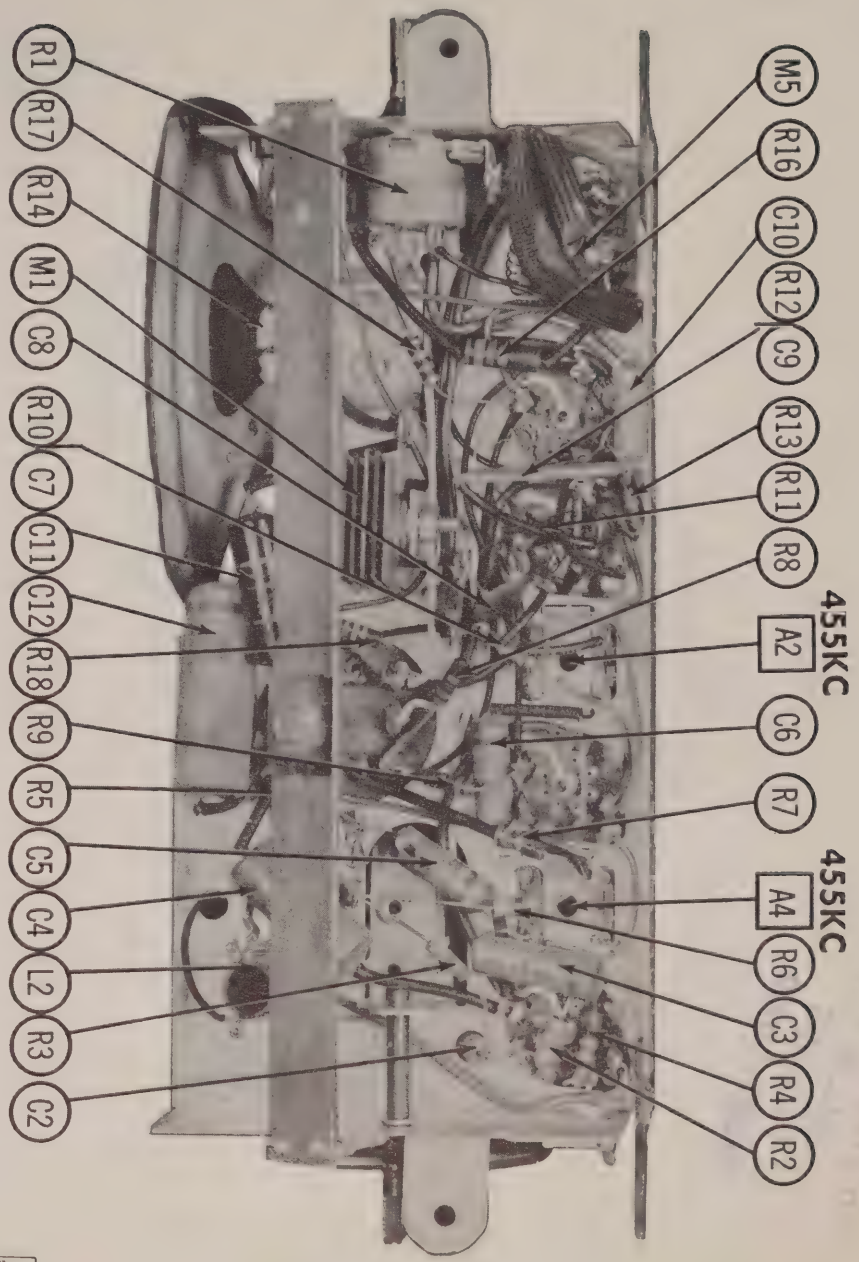
ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7½ V.	3B6160	717			C5			
M3	90V.	3B6260 ("Wizard" types)		490			N60		

MISCELLANEOUS

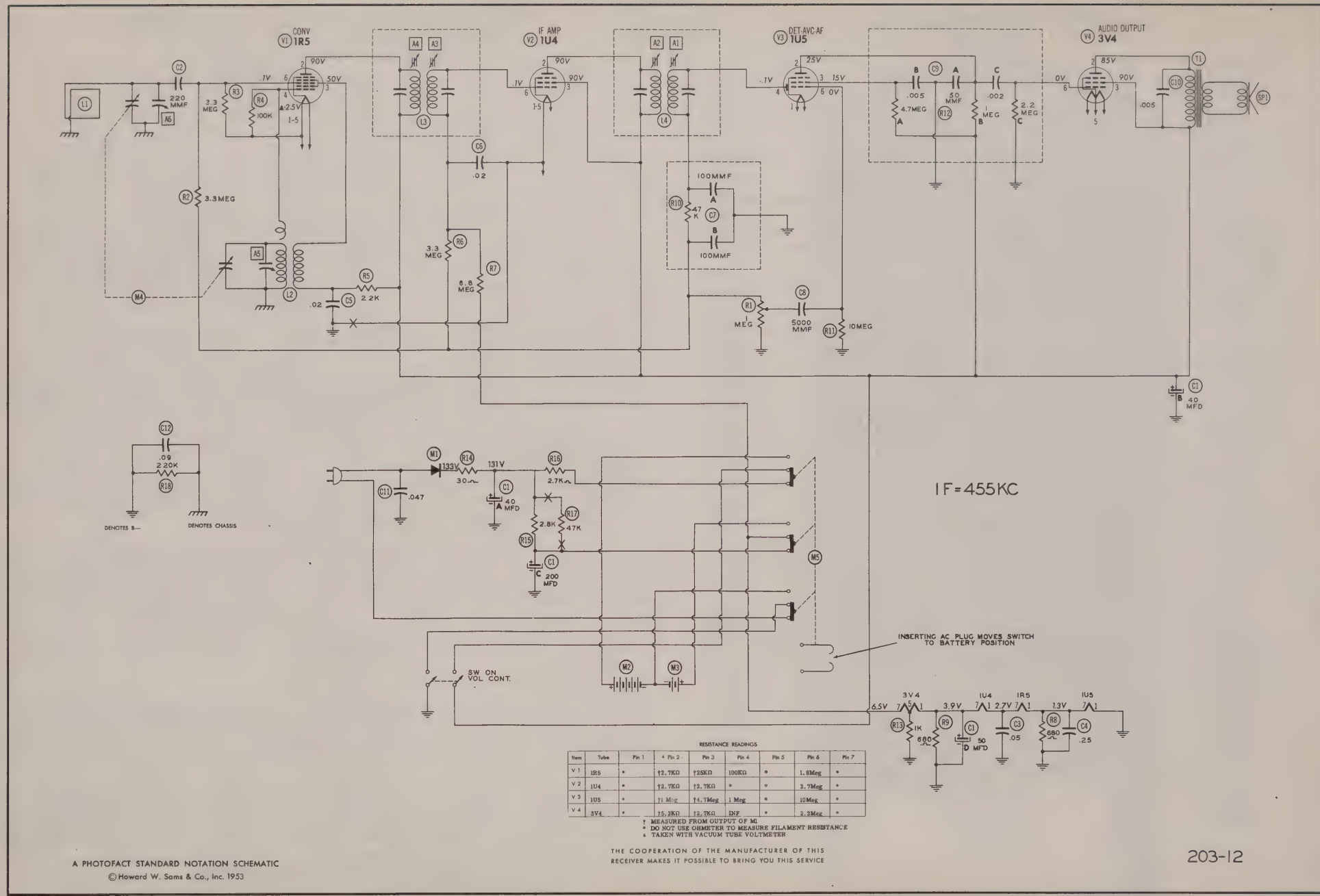
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuning Capacitor	8A-21093	30-452MMF, 20-150MMF
M5	Switch	20A-19588	Power Selector
	Cabinet	5C-19576-84	
	Handle	4M-19581	
	Escutcheon	48-19574	Includes dial scale
	Pointer	2G-19590	
	Knob	4B-19582	Tuning, Volume (2 used)



CHASSIS—BOTTOM VIEW



TRUETONE MODEL D-3120A



RESISTANCE READINGS

Item	Tube	Pin 1	* Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†2.7KΩ	†25KΩ	100KΩ	*	1.8Meg	*
V 2	1U4	*	†2.7KΩ	†2.7KΩ	*	*	2.7Meg	*
V 3	1U5	*	†1 Meg	†4.7Meg	1 Meg	*	10Meg	*
V 4	3V4	*	†5.2KΩ	†2.7KΩ	INF	*	2.2Meg	*

† MEASURED FROM OUTPUT OF M1
* DO NOT USE OHMETER TO MEASURE FILAMENT RESISTANCE
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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203-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

L. F. ... ON
3987 ... ST.
DENVER, COLORADO

TRUETONE
MODELS D-3130A, B

TRUETONE
MODELS D-3130A, B

TRADE NAME	Truetone Model D3130A, B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Five)	Types 1U4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC/DC (or) 4½ volts DC "A" Supply & 90 volts DC "B" Supply
RATING	.120 Amp. @ 117 volts AC (or) 112 MA @ 4.5 volts DC & 11 MA @ 90 volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of mid-section of tuning gang. Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. Replace chassis bottom plate.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6, A7	"
4.		"	600KC	Tune to 600KC signal	"	A8	Adjust for maximum output while rocking tuning gang.
5.		"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE
MODEL D3130A, B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det-AVC-AF Amp.	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▬50	150	25E53	AFH4-34		DO26			R1310	Note 1
B	■50	150								Note 1
C	▲50	150								Note 1
D	100	25								Note 1
C2	20	150	25E55							Note 2
C3	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	10		23E2027-5	SI10	D6-100	TM5Q1	GP1K-100	UC-541	5GA-Q1	
C5	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C6	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	5000		23E2025	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C8	5000		23E2025	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C9A	100		†23E2022-2	SI100	†PC-50	TM5T1	†1403-01	UC-531	†100C1	
B	100			SI100		TM5T1		UC-531		
C10	5000		23E2025	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C11A	100			SI100		TM5T1		UC-531		
B	.005		♦23E2042	BPD-005	♦PC-91	TM5D5	♦1407-03	DC-525	♦103C3	
C	.005			BPD-005		TM5D5		DC-525		
C12	5000		23E2025	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C13	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C14	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C15	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	Note3
C16	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C17	5000		23E2025	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C18	.05	400	20E611	P488-05	DF-503	PTE4S5		PT415	4TM-S5	Note 4
C19	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	Note 3

Note 1. Series A chassis uses 40-30-20-100MFD unit (part #25E48).
Chassis with Underwriter's Approval use part #25E56.
Note 2. Used in Series A chassis only.
Note 3. When C15 is .2MFD (part #23E420), C19 is omitted.
Note 4. C11 is part of choke-capacitor assembly (part #20E611) used in chassis with Underwriter's Approval.
† Items C9A, C9B and R9 are combined in one unit.
♦ Items C11A, C11B, C11C, R12A, R12B, R12C are combined in one unit.

CONTROLS

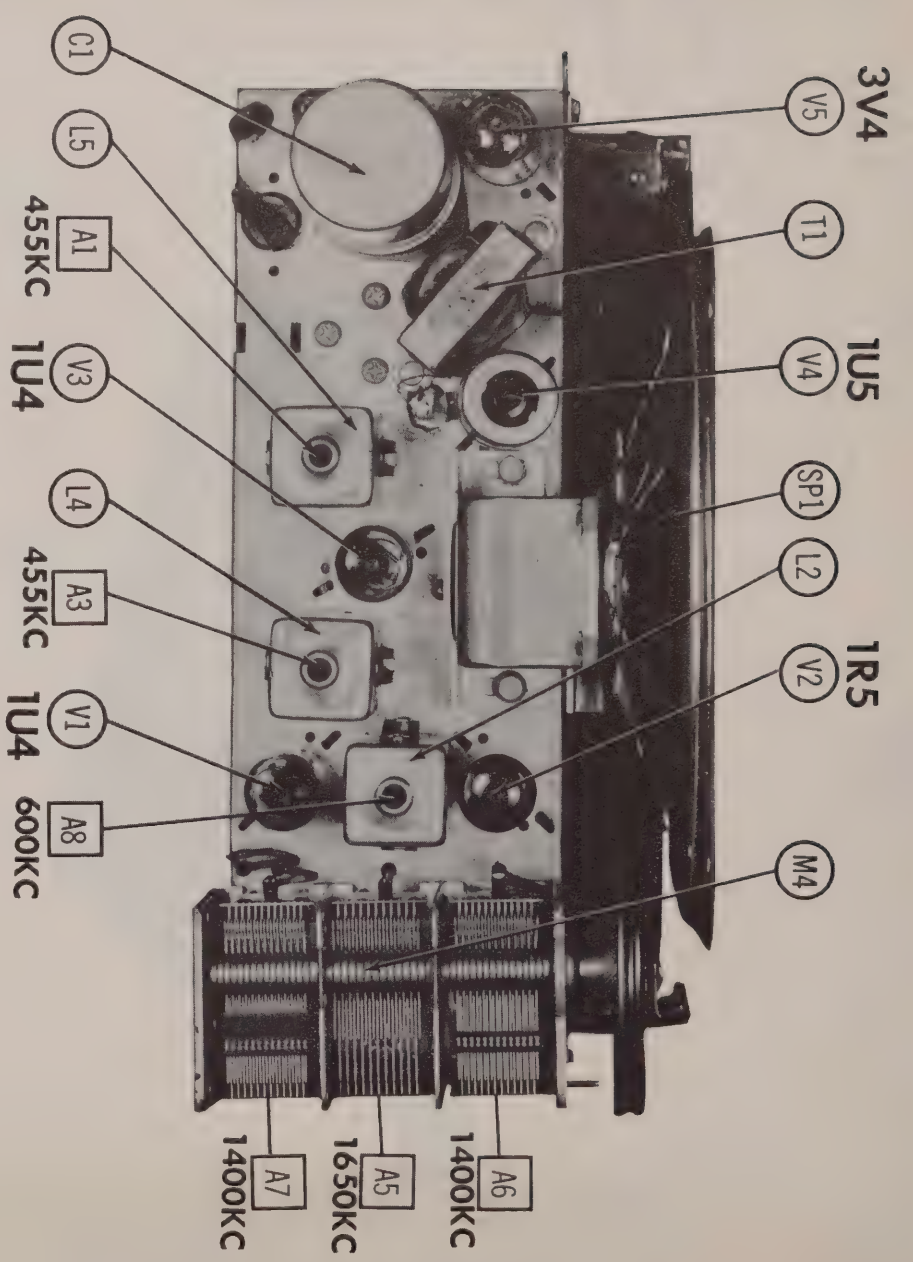
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2 Meg	½	28E63	Q13-139	AG-66-Z	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	KB-2	US-27	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATTS	TRUETONE PART No.	IRC PART No.	
R2	1 Meg	½	27E105	BTS-1 Meg	Note
R3	1 Meg	½	27E105	BTS-1 Meg	
R4	3.3Meg	½	27E335	BTS-3.3Meg	
R5	1 Meg	½	27E105	BTS-1 Meg	Note
R6	150KΩ	½	27E154	BTS-150K	
R7	10KΩ	½	27E103	BTS-10K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATTS	TRUETONE PART No.	IRC PART No.	
R8	3.3Meg	½	27E335	BTS-3.3Meg	
R9	47KΩ	½	†23E2022-2	BTS-47K	
R10	4.7Meg	½	27E475	BTS-4.7Meg	
R11	3.3Meg	½	27E335	BTS-3.3Meg	
R12A	4.7Meg	½		BTS-4.7Meg	
B	1 Meg	½	♦23E2042	BTS-1 Meg	
C	2.2Meg	½		BTS-2.2Meg	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R13	4.7Meg	½	27E475	BTS-4.7Meg	
R14	3.3Meg	½	27E335	BTS-3.3Meg	
R15	680Ω	½	27E681	BTS-680	
R16	680Ω	½	27E681	BTS-680	
R17	680Ω	½	27E681	BTS-680	
R18	390Ω	½	27E391	BTS-390	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R19	470Ω	½	27E471	BTS-470	
R20	1500Ω	1	27E152-3	BTA-1500	
R21A	1300Ω	65	27E1000-6		
B	1300Ω				
R22	56Ω	1	27E560-3		

Note . Some models may use a 680KΩ resistor in this application.
† Items R9, C9A, C9B are combined in one unit.
♦ Items R12A, R12B, R12C, C11A, C11B, C11C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	9.8KΩ	3.46Ω	640Ω	.68Ω	22E50		A-2927 ①		S-11X	① Drill one new mtg hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"X6"	PM	3.46Ω	1E42	46J6	46A07	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA MILLER PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L1	Loop Ant.	.2Ω	3.4Ω	64E31			
L2	RF Coil	110Ω	4.4Ω	20E565			
L3	Osc. Coil	1.8Ω	8.5Ω	20E566			
L4	Input IF	24.5Ω	24Ω	20E463	1312-C1*	16-6666*	
L5	Output IF	24.5Ω	24Ω	20E463	1312-C4 *	16-6667	

* Drill mounting holes.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA TRUETONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.053A	57E14	NB5	5M4	1003	6S75	75

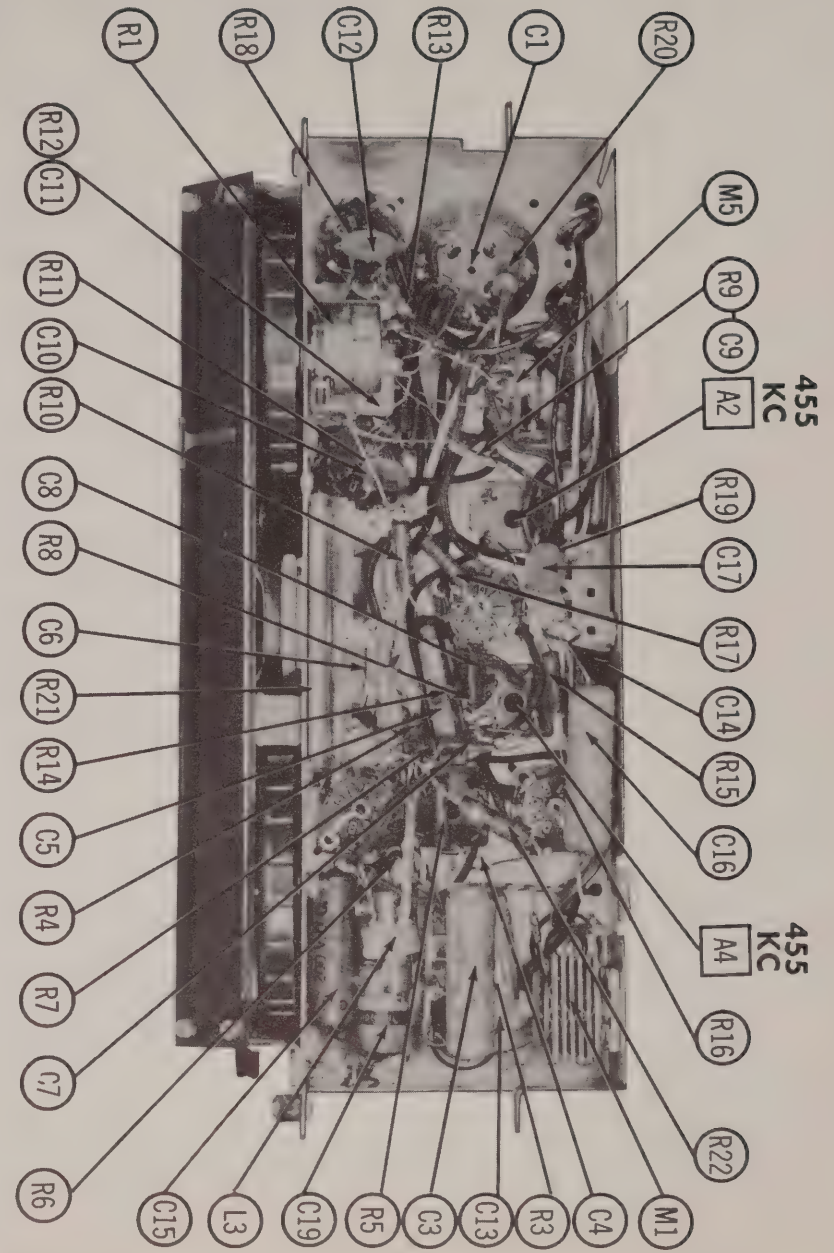
BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	4.5V	3B6135	736			F3			
M3	90V	3B6260 ("Wizard" types)		490			N60		

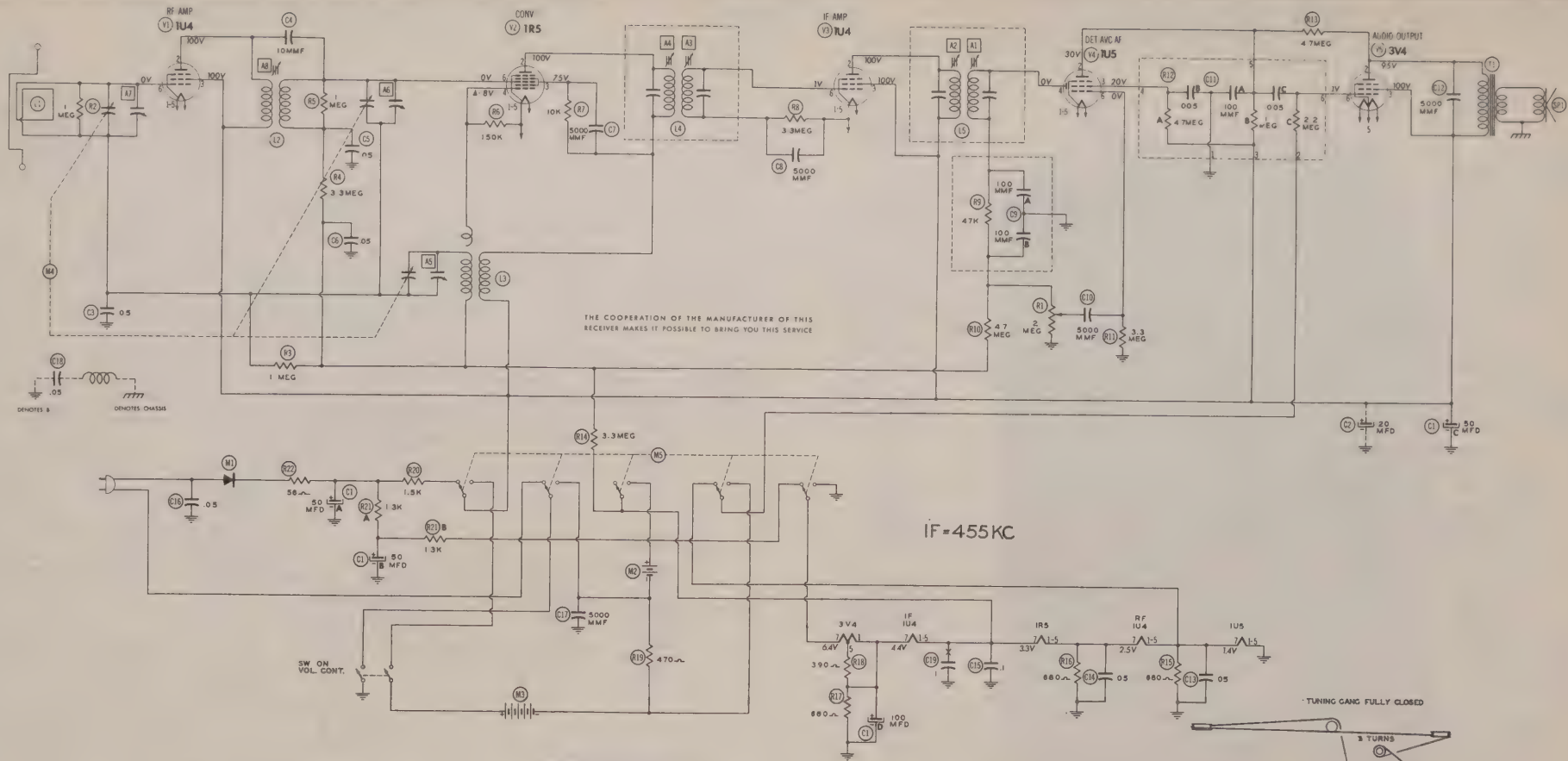
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuning Capacitor	24E54	25-426MMF, 23-421MMF, 29-158MMF
M5	Switch	29E20	Power Selector
	Cabinet	7E230-3	With handle
	Back	20E573-2	With Loop
	Grille	7E232-2	
	Seale	36E61	
	Pointer	35E28	
	Knob	37E64-2	Tuning
	Knob	37E66-2	Off/On Volume

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D3130A, B



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†1.5KΩ	†1.5KΩ	INF	*	3.2Meg	*
V 2	1R5	*	†1.5KΩ	†12KΩ	150KΩ	*	5.5Meg	*
V 3	1U4	*	†1.5KΩ	†1.5KΩ	INF	*	3.3Meg	*
V 4	1U5	*	†820KΩ	†4.7Meg	1.6Meg	*	3.3Meg	*
V 5	3V4	*	†2.2KΩ	†1.5KΩ	INF	*	2.2Meg	*

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1.
* USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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203-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

TRUETONE
MODELS 2D2333A, B

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MODEL 2D2333A

TRUETONE
MODELS 2D2333A, B

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DATE 5–53 SET 203 FOLDER 14

TRUETONE
MODELS 2D2333A, B

DENVER, COLORADO

TRUETONE
MODELS 2D2333A, B

TRADE NAME	Truetone Model 2D2333A, B
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty - Three
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.82 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 26.20MC, Sound IF 21.70MC (Intercarrier)

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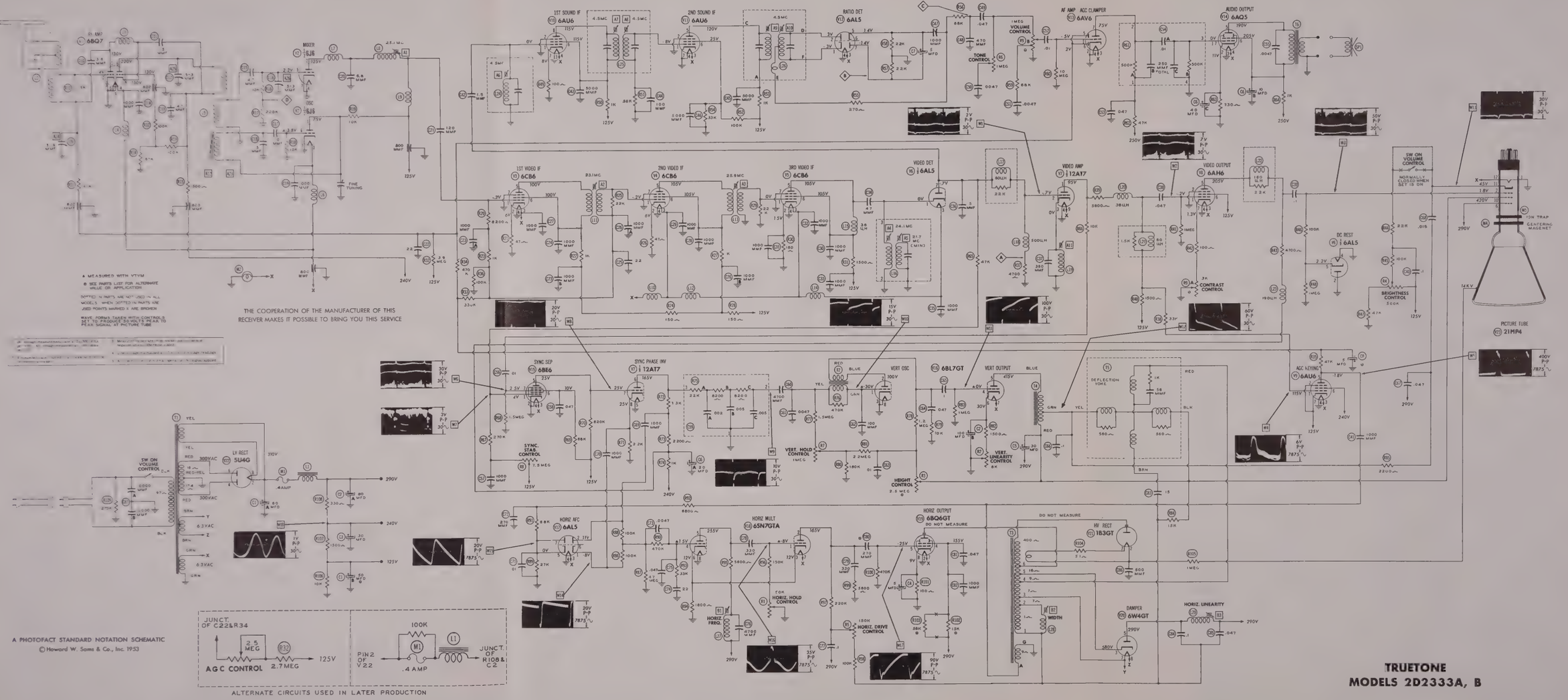
TRUETONE
MODELS 2D2333A, B
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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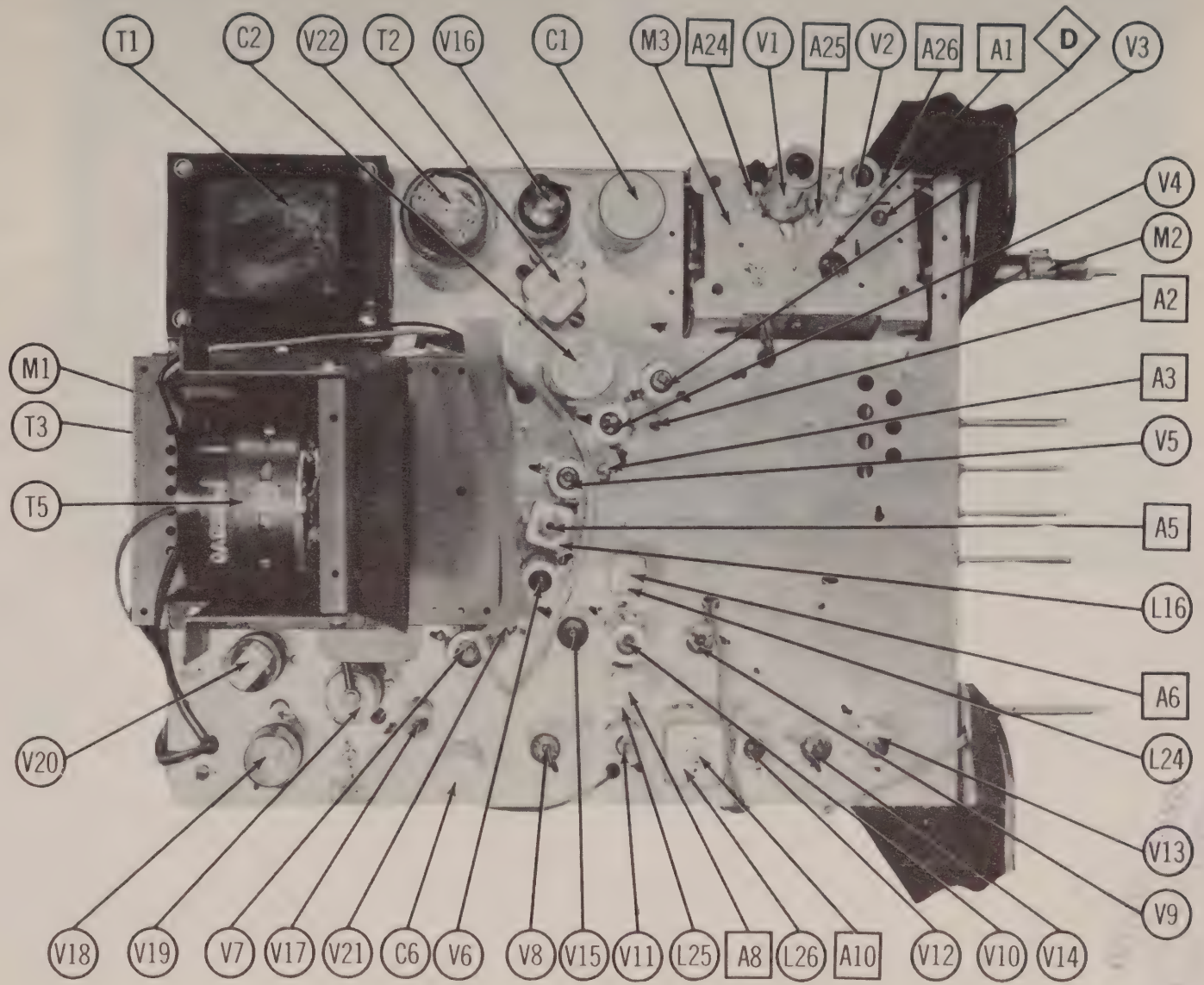
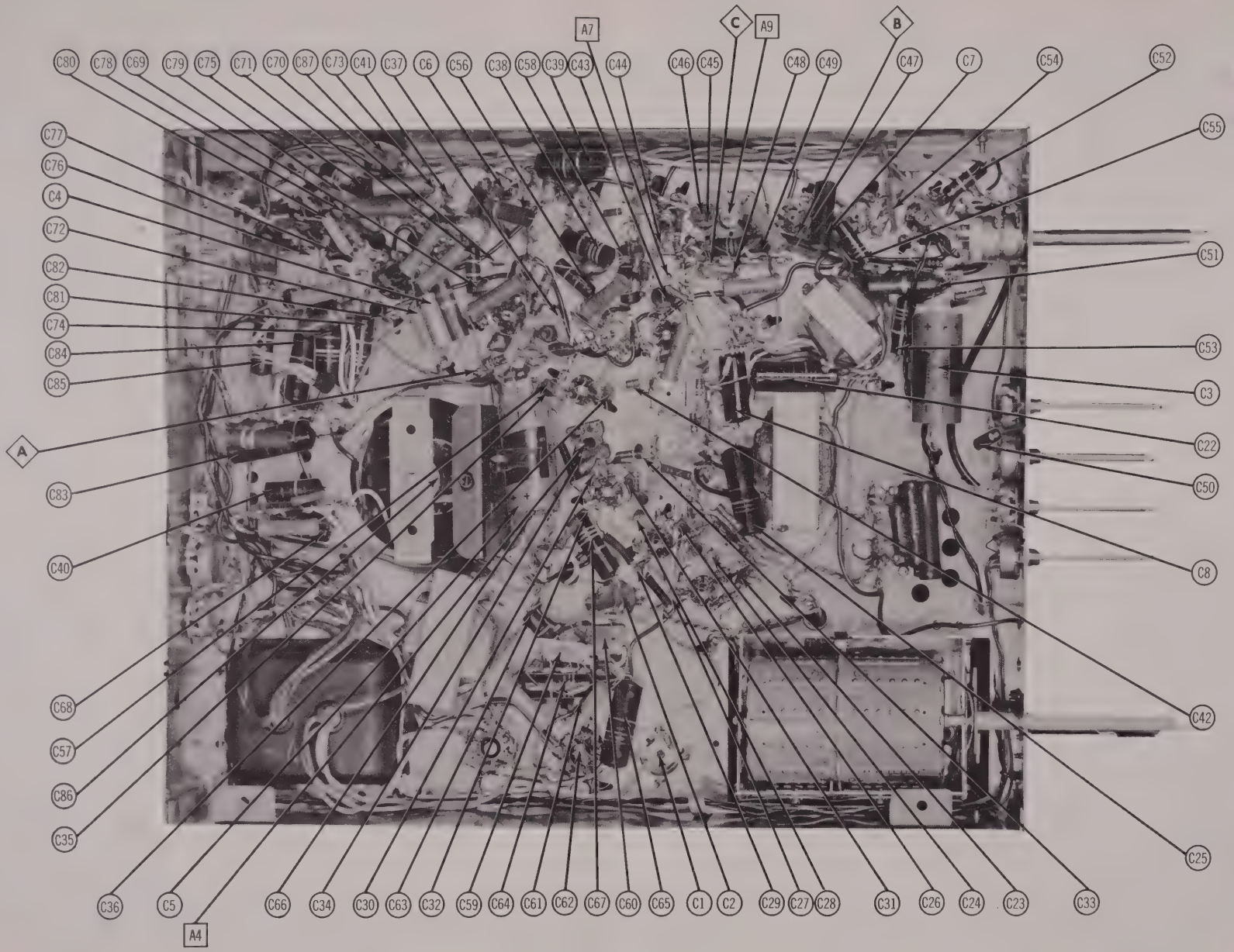
ALTERNATE CIRCUITS USED IN LATER PRODUCTION
JUNCT. OF C228 R34
2.5 MEG
R32
2.7 MEG
125V
AGC CONTROL
100K
M1
L1
PIN 2 OF V22
.4 AMP
JUNCT. OF R108 & C2
TRUETONE
MODELS 2D2333A, B

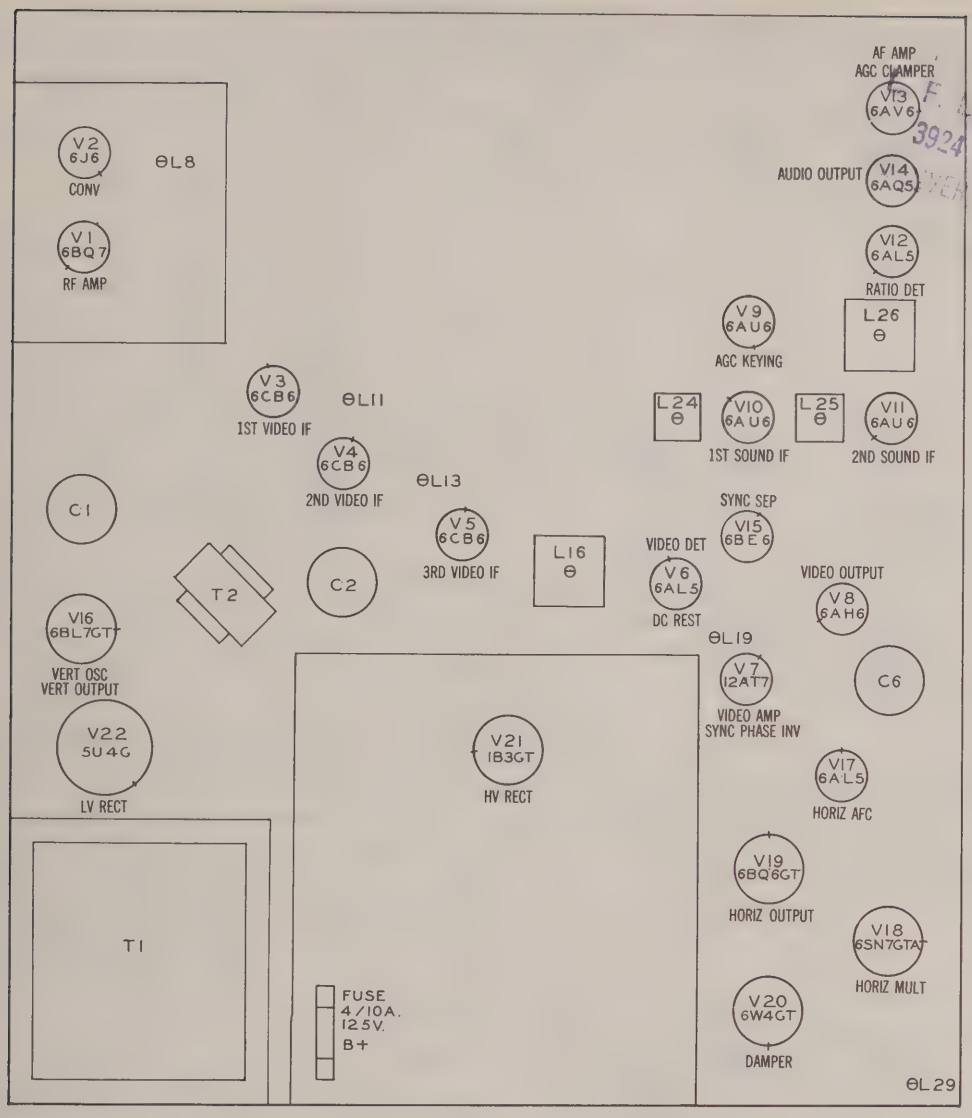


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V22, Fuse(M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pid, has sound, has raster-V6, V7, V8, V23
Has pic, ho sound-V10, V11, V12, V13, V14
Overloaded picture-V9, V13

SYNC FAILURE
No vert. sync.-V7, V16
No horiz. sync.-V7, V17, V18
No vert. or horiz. sync. V7, V15

SWEEP FAILURE
No raster, has sound-V18, V19, V20, V21, V23
No vertical deflection-V16
Poor vert. linearity or foldover-V16
Poor horiz. linearity or foldover-V18, V19, V20
Narrow picture-V18, V19, V20, V21, V22
Vert. off freq.-V7, V16
Horiz. off freq.-V7, V17, V18

F. [illegible]KENSHIP
3924 MEADE ST.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V18.

VIDEO IF ALIGNMENT

Remove the converter tube, V2 and replace with a 6J6 which as pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C25. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	25.1MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	24MC (10MC Swp)	21.7MC 23MC 23.5MC 25.25MC 26.2MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve similar to fig.1 If necessary retouch A1 through A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 1, (cathode) of 6AL5 (V6) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A6, A7, A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C) Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A10	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

Turn contrast control to maximum clockwise position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to pin 7 of 6AL5 (V12).	Not used	4.5MC (400∿Mod.)	Any	Vert. amp. to pin 2 of picture tube.	A11	Adjust for MINIMUM 400∿ indication on scope.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The oscillator adjustment screws for each channel are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point (A). Low side to chassis.	A12	Adjust to place sound marker in notch as in fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point ◇D◇. Low side to chassis.	A24, A25 A26	Adjust for response curve similar to fig. 5. with markers above 90%.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to fig. 5. If markers fall below 70% on any channel make slight compromise adjustments of A24, A25 and A26 with channel switch set that channel, Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

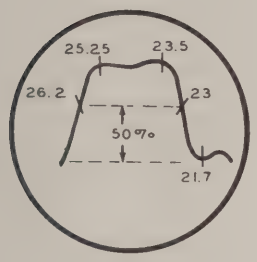


FIG. 1

FIG. 2

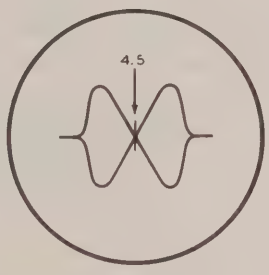


FIG. 3

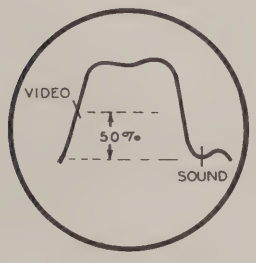


FIG.4

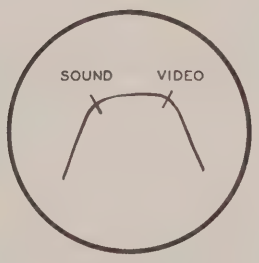
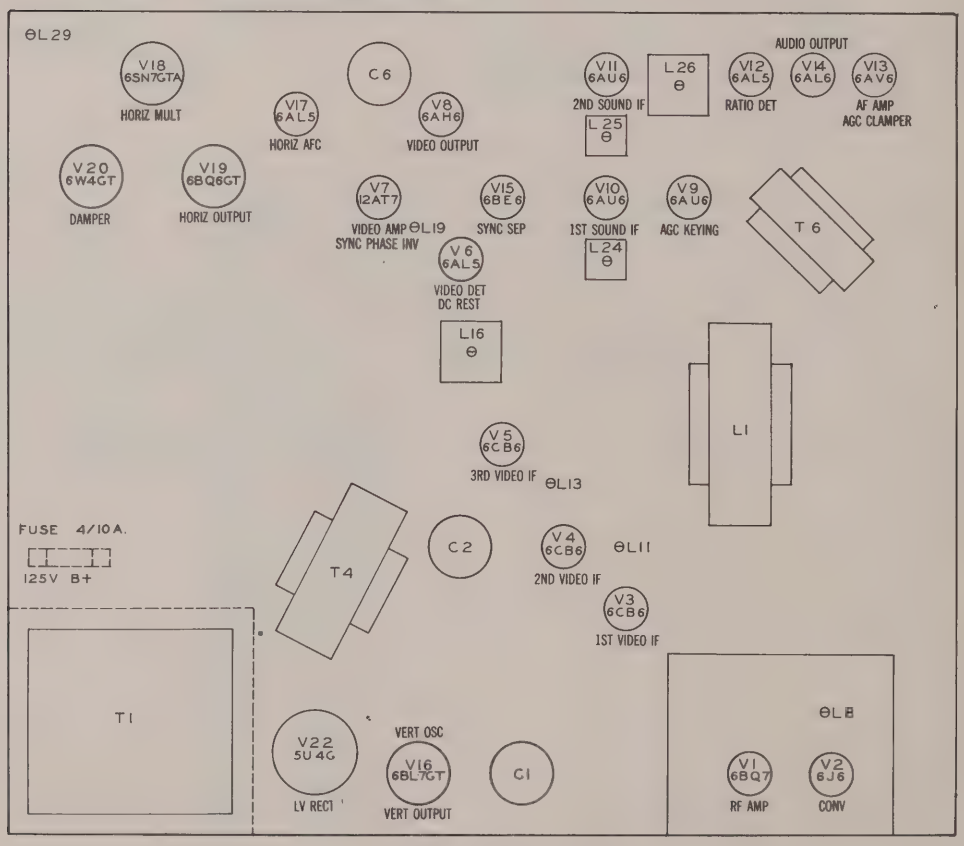


FIG 5

RESISTANCE MEASUREMENTS

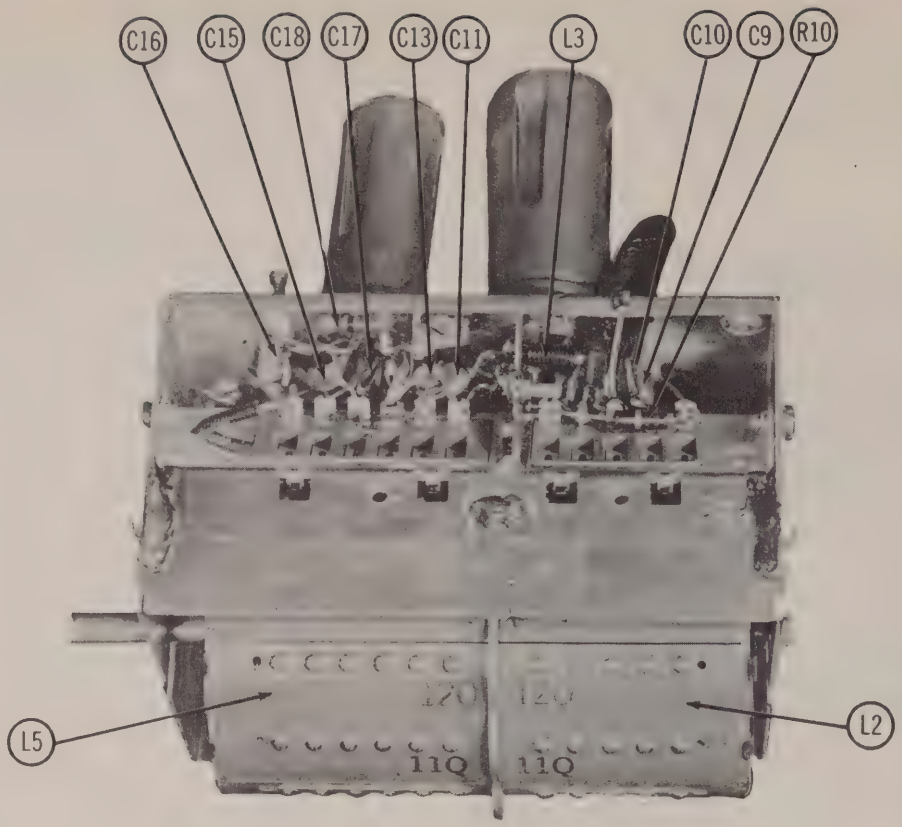
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	720KΩ	0Ω	.1Ω	0Ω	1.9KΩ	†175KΩ	INF	0Ω
V 2	6J6	†12KΩ	†1.9KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.2KΩ	†3.2KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	.1Ω	0Ω	1 Meg	0Ω	4.7KΩ		
V 7	12AT7	†[illegible]KΩ	4.7KΩ	.3Ω	0Ω	0Ω	†6.9KΩ	†820KΩ	2.2KΩ	.1Ω
V 8	6AH6	1 Meg	0Ω	.1Ω	0Ω	†6.1KΩ	†1.9KΩ	250Ω		
V 9	6AU6	†36KΩ	†1.9KΩ	.1Ω	0Ω	440KΩ	†380Ω	†1.9KΩ		
V 10	6AU6	2.8Ω	0Ω	0Ω	.1Ω	†2.9KΩ	†2.9KΩ	100Ω		
V 11	6AU6	56KΩ	0Ω	.1Ω	0Ω	†2.9KΩ	25KΩ	0Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	22KΩ	INF	22KΩ		
V 13	6AV6	10 Meg	0Ω	.1Ω	0Ω	670KΩ	670KΩ	550KΩ		
V 14	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†1.9KΩ	†1.4KΩ	500KΩ		
V 15	6BE6	52KΩ	0Ω	.1Ω	0Ω	†820KΩ	70KΩ	1.5Meg		
V 16	6BL7GT	2.3Meg	#1.6Meg	0Ω	1 Meg	#16KΩ	3KΩ	.1Ω	0Ω	
V 17	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	8.7KΩ	INF	8.7KΩ		
V 18	6SN7GTA	175KΩ	#420KΩ	1.8KΩ	5.1Meg	†5.7KΩ	1.8KΩ	.1Ω	0Ω	
V 19	6BQ6GT	5.7KΩ	0Ω	INF	†11KΩ	470KΩ	#200KΩ	.1Ω	100Ω	Top Cap #16Ω
V 20	6W4GT	†51Ω	INF	190KΩ	4.7Meg	†67Ω	†51Ω	#16Ω	#16Ω	
V 21	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #416Ω
V 22	5U4G	INF	9.5KΩ	INF	17.4Ω	1.5KΩ	16Ω	INF	9.5KΩ	
V 23	21MP4	0Ω	1.1Meg	Pin 6 †51Ω	Pin 10 #15KΩ	Pin 11 200KΩ	Pin 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V20

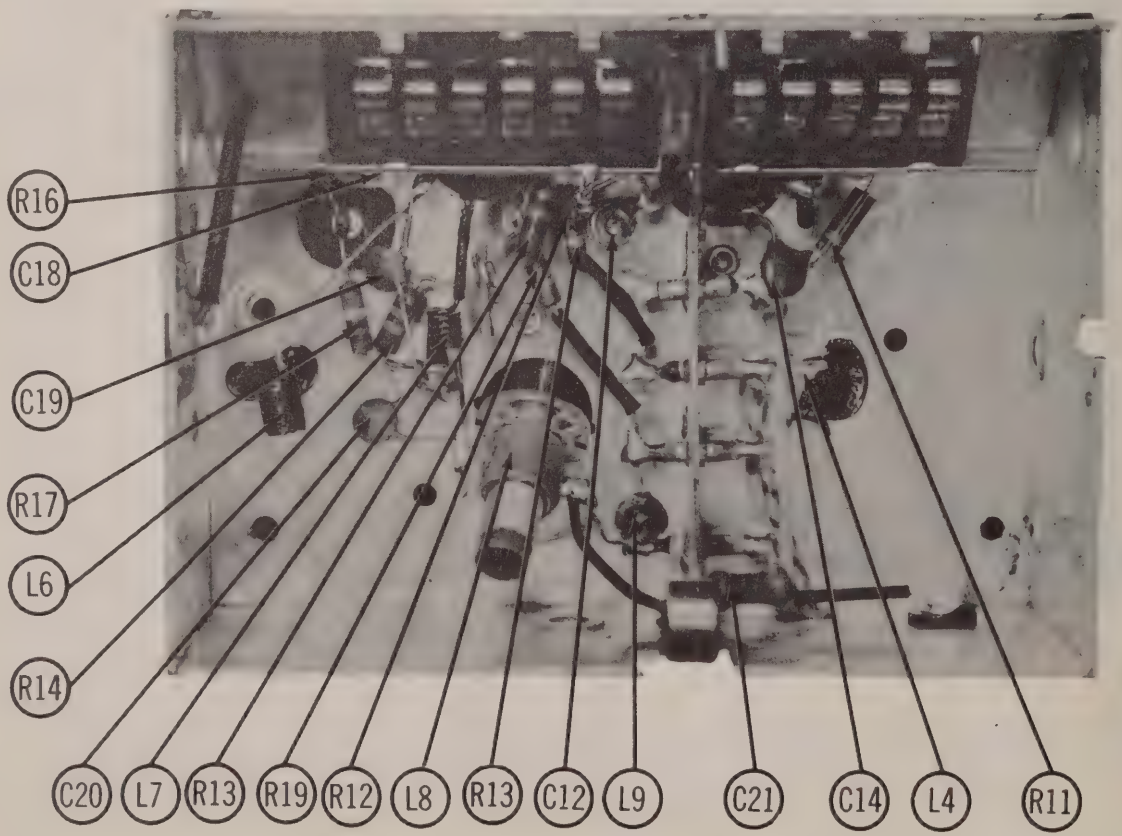


BOTTOM VIEW

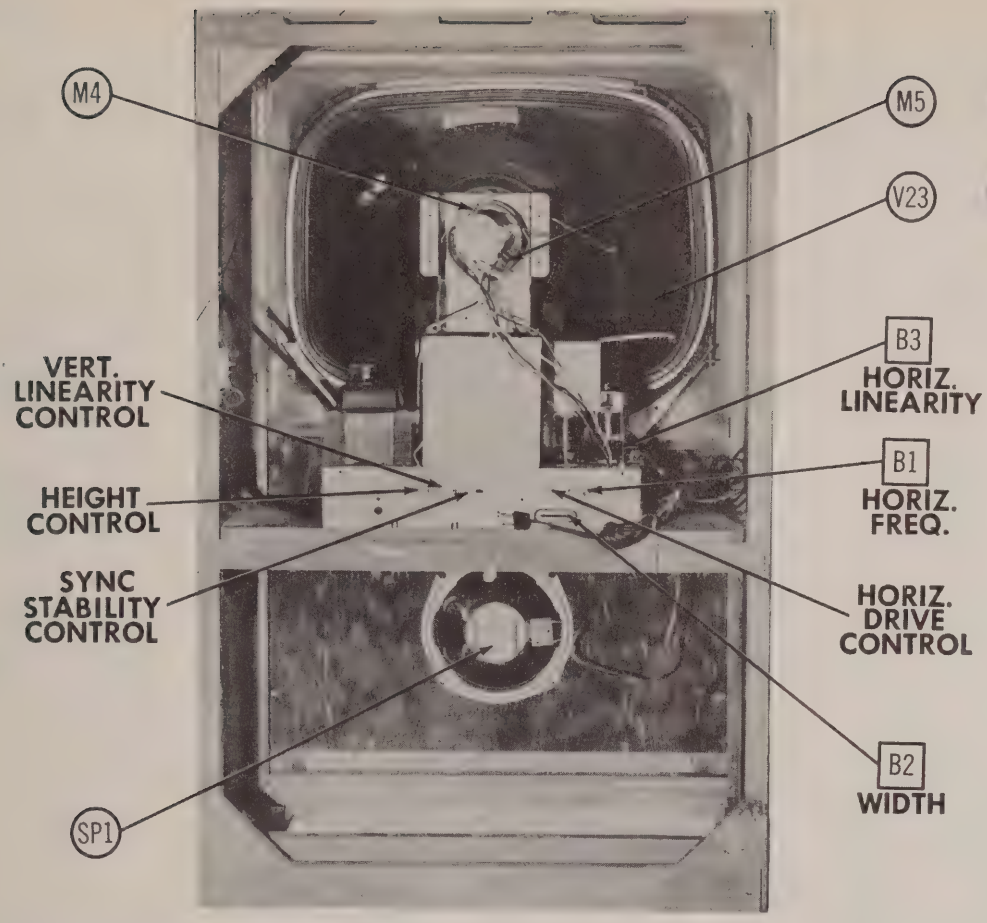
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture falls into sync.

Adjust the horizontal drive control for the best compromise between brightness and linearity.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

SYNC STABILITY CONTROL ADJUSTMENT

Tune set to strongest TV signal available.

Turn the sync stability control clockwise until bending of the picture occurs at the top, then turn counter clockwise until the bending just disappears.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 2 wood & 2 metal screws, Remove rear cover.
3. Disconnect built-in antenna & speaker.
4. Remove 5 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts. Remove speaker.

NOTE:
FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	Video Amplifier-Sync Phase Inv.	12AT7	12AT7	9A	
V8	Video Output	6AH6	6AH6	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Sync Separator	6BE6	6BE6	7CH	
V16	Vert. Oscillator-Vert. Output	6BL7GT	6BL7GT	8BD	
V17	Horiz. AFC	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V23	21MP4			12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	▲80	475	45X390	AFHJ-46		UPT8425		FP266	TVL-3792	
B	▲50	450				V10				Note 1
C2A	▲80	450	45X391	AFHJ-142		UPT4445-V10		FP375	TVL-3764	
B	▲100	50								
C3	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C4	5	25	45X378	PRS150/4		BBR-5-50		TC30	TVA-1203	
C5	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C6A	▲20	400	45X392	AFHJ-137		UPT2145-V5		FP366	TVL-3751	
B	▲20	400								
C	40	50								
C7	5	25	45X378	PRS150/4		BBR-5-50		TC30	TVA-1203	
C8	5	25	45X378	PRS150/4		BBR-5-50		TC30	TVA-1203	Note 2
C9	3-9		31B-207		829-10					
C10	3.6		CD8C3R6C							
C11	1.5		CD8C1R5M	SU1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C12	1.5-3		31B-206		829-3			CT565A		
C13	47		CD8X470K	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C14	1000		CD8X102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C15	47		CD8Q470K	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C16	1.5-3		31B-206		829-3			CT565A		
C17	10		CD10C100K	SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C18	5		CD8U050C	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCLB-V47	
C19	1000		CD8X102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	6.8		CD8C6R8C	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCLB-V68	
C21	120		13D-055	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C22	22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C23A	1000		80X3	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C24	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C26A	1000		80X3	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C27	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C28	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C34	47		47X603	SI47	D6-470	5R5Q5	GP1K-470	UC-5447	5GA-Q47	
C35	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C36	5		47X562	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C37	360	500	47X568							
C38	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C39	.1	400	RCP10M4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C40	.1	200	RCP10M2104M	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C41	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C42	1.5		47X584	SIL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C43	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	100		47X604	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C45	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C46	5000		47X507	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C47	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C48	470	500	47X525	1468-0005	D6-471	5W5T5	GP2K-471	MC-245	1FM-35	
C49	.047	200	RCP10M2473M	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C50	.0047	400	RCP10M4472M	P488-0047	D6-472	PTE6D47	GP2-333-472	TP6247	6TM-D47	
C51	.0047	400	RCP10M4472M	P488-0047	D6-472	PTE6D47	GP2-333-472	TP6247	6TM-D47	
C52	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C53	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C54A	.01				†PC-80		†1404-01		†102C1	
B	250		†76X5							
C										
C55	.0047	600	RCP10M6472M	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C56	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C57	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C58	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C59A	.002			P688-002		PTE6D2		PT622		
B	.005		●76X7	P688-005	●PC-100	PTE6D5	●1405-01	PT625	●101C1	
C	.005			P638-005		PTE6D5		PT625		
C60	4700	500	47X543	1464-005		1DR5D5		MCB465	MS-25	
C61	.0047	400	RCP10M4472M	P488-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C62	100		47X604	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C63	.01	600	RCP10M6103M	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C64	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C65	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C66	.1	600	RCP10M6104M	P688-1	DF-104	PTE6 P1		PT601	6TM-P1	
C67	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C68	.015	600	RCP10M6153M	P688-015		PTE6S15			6TM-S15	
C69	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C70	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C71	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C72	270	500	RCM20A271K	1469-0003		5R5T3		MCB241	MS-33	
C73	.0047	600	RCP10M6472M	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C74	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C75	.047	500	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	2TM-S47	
C76	4700	500	47X543	1464-005		1DR5D5		MCB465	MS-25	
C77	.1	600	RCP10M4104M	P688-1	DF-104	PTE6P1		PT601	6TM-S1	
C78	330	500	47X570	1469-00035						
C79	330	500	47X570	1469-00035						
C80	270	500	RCM20A271K	1469-0003		5R5T3		MCB241	MS-33	Note 3
C81	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C82	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C83	.15	400	RCP10M4154M	P488-15		PTE4P15			4TM-P15	
C84	.1	400	RCP10M4104M	P488-1		PTE4P1		PT401	4TM-P1	
C85	.047	400	RCP10M4473M	P488-047		PTE4S47		PT4147	4TM-S47	
C86	500	20000	47X560	HV20C	TV3-502	MMC-20TS	413-501		20DK-T5	
C87A	10000		†76X8	BPD-01	DD-3-103	TM5D81	†821-01	DC-511	5HK-2S1	
B	10000			BPD-01			†821-01	DC-511		

Note 1. Some models use 60MFD in this application.
Note 2. Some models use 4MFD in this application (Part #45X361)
Note 3. Some models use 180MMF in this application (Part #47X564)
● Items C59A, C59B, C59C, R75A, R75B, R75C are combined in one unit.
† Items C54A, C54B, C54C, R61A, R61B are combined in one unit.
When replacing items separately C54B, C54C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	40X361A	Q11-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R1A
R2A	8KΩ	½	40X362	Q11-116	AG-27-S	AB-14	SU-20	Vert Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A
R3A	2.5Meg	½	40X364	Q11-239	AG-84-S	AB-83	SU-565	Height-Note 1
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A
R4A	500KΩ	½	B40X333-A	Q11-133	AG-58-S	AB-59	U-50	Brightness
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R4A
R5A	150KΩ	½	B40X331-A	Q11-129	AG-52-S	AB-46	U-43	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	1 Meg	½	B 40X334-D	Q11-137	AG-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R6A
R7A	1 Meg	½	B40X334-D	Q11-137	AG-61-S	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R7A
R8	7.5Meg	½	40X393C					Sync. Stability
R9A	3000Ω	½	78X12	QJ-337 ●				Contrast-Panel-Note 2
B	1 Meg	½						Volume & Sw. - Tapped ⓐ 200KΩ - Rear

● CONCENTRIKIT EQUIVALENT, KIT K-2, BASE ELEMENTS & SHAFTS B17-112 & P1-310 (Panel) B13-137 & R2-322 (Rear) & SWITCH 76-2

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R10	15KΩ	½	12A-004	BTS-15K	
R11	47KΩ	½	12A-039	BTS-47K	
R12	100KΩ	½	12A-094		
R13	100KΩ	½	12A-166	BTS-100K	
R14	160KΩ-5%	½	12A-167	BTS-160K-5%	
R15	1500Ω	½	12A-183	BTS-1500	
R16	10KΩ	½	12A-040	BTS-10K	
R17	220KΩ	½	12A-041	BTS-220K	
R18	10KΩ	½	12A-040	BTS-10K	
R19	10KΩ	½	12A-040	BTS-10K	
R20	8200Ω	½	B63822		
R21	47Ω	½	B63470		
R22	1000Ω	½	B65102	BTS-1000	
R23	1000Ω	½	B65102	BTS-1000	
R24	150Ω	½	B65151	BTS-150	
R25	22KΩ	½	B63223		
R26	47Ω	½	B63470		
R27	1000Ω	½	B65102	BTS-1000	
R28	150Ω	½	B65151	BTS-150	
R29	22KΩ	½	D63223		
R30	180Ω	½	B64181	BTS-180	
R31	1500Ω	½	B64152	BTS-1500	
R32	3.9Meg-5%	½	B63395	BTS-3.9Meg-5%	
R33	330KΩ-5%	½	B63334	BTS-330K-5%	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R34	470KΩ	½	B64474	BTS-470K	
R35	47KΩ	½	B64473	BTS-47K	
R36	100KΩ	½	B64104	BTS-100K	
R37	47000-5%	½	B63472	BTS-4700-5%	
R38	33KΩ	½	B64333	BTS-33K	
R39	5600Ω	1	C64562	BTA-5600	
R40	1500Ω	½	B64152	BTS-1500	
R41	1 Meg	½	B64105	BTS-1 Meg	
R42	100Ω	½	B64141	BTS-100	
R43	4700-5%	1	C64472	BTA-4700-5%	
R44	22KΩ	½	B64223	BTS-22K	
R45	100KΩ	½	B65104	BTS-100K	
R46	100KΩ	½	B65104	BTS-100K	
R47	47KΩ	½	B65473	BTS-47K	
R48	1 Meg	½	B64105	BTS-1 Meg	
R49	100Ω	½	B64101	BTS-100	
R50	1000Ω	½	B65102	BTS-1000	
R51	56KΩ	½	B64563		
R52	100KΩ	½	B64104		
R53	1000Ω	½	B65102	BTS-1000	
R54	33KΩ	½	B64333	BTS-33K	
R55	270Ω	½	B64271	BTS-270	
R56	68KΩ	½	B64683	BTS-68K	
R57	22KΩ	½	B64223	BTS-22K	
R58	22KΩ	½	B64223	BTS-22K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R59	68KΩ	½	B64683	BTS-68K	
R60	10 Meg	½	B65106	BTS-10 Meg	
R61A	500KΩ	½	†76X5		
B	500KΩ	½			
R62	47KΩ	½	B65473	BTS-47K	
R63	330Ω	1	C64331	BTA-330	
R64	1000Ω	2	D64102	BTB-1000	
R65	47KΩ	½	B64473	BTS-47K	
R66	10KΩ	½	B64103	BTS-10K	
R67	270KΩ	½	B64274	BTS-270K	
R68	1.5 Meg	½	B64155	BTS-1.5 Meg	
R69	68KΩ	½	B64683	BTS-68K	
R70	820KΩ	½	B64824	BTS-820K	
R71	2200Ω	½	B63222	BTS-2200	
R72	3300Ω	½	B64332	BTS-3300	
R73	2200Ω-5%	½	B63223	BTS-2200-5%	
R74	1000Ω	2	D64102	BTB-1000	
R75A	22KΩ	½		BTS-22K	
B	8200Ω	½	●76X7	BTS-8200	
C	8200	½		BTS-8200	
R76	470KΩ	½	B65474	BTS-470K	
R77	1.5 Meg	½	B64155	BTS-1.5 Meg	
R78	1.2 Meg	½	B 64125	BTS-1.2 Meg	
R79	10KΩ	½	B64103	BTS-10K	
R80	180KΩ	½	B64184	BTS-180K	
R81	2.2 Meg	½	B64225	BTS -2.2 Meg	
R82	1500Ω	½	B64152	BTS-1500	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R83	1 Meg	½	B64105	BTS-1 Meg	
R84	15KΩ	2	D64153	BTB-15K	
R85	2200Ω	½	B64222	BTS-2200	
R86	100KΩ	½	B64104	BTS-100K	
R87	4.7Meg	½	B65475	BTS-4.7Meg	
R88	100KΩ	½	B64104	BTS-100K	
R89	27KΩ	½	B64273	BTS-27K	
R90	470KΩ	½	B65474	BTS-470K	
R91	6800Ω	½	C64682	BTS-6800	
R92	6800Ω	½	C64682	BTS-6800	
R93	33KΩ	½	B65333	BTS-33K	
R94	18000-5%	½	B63182	BTS-1800-5%	
R95	5600Ω	1	C63562	BTA-5600	
R96	150KΩ	½	B63154	BTS-150K	
R97	220KΩ	½	B63224	BTS-220K	
R98	100KΩ	½	B64104	BTS-100K	
R99	5600Ω	½	B64562	BTS-5600	
R100	470KΩ	½	B64474	BTS-470K	
R101	100Ω	2	D64101	BW-2-100	
R102	15KΩ	2	D64153	BTB-15K	Note 1
R103	56KΩ	½	B64563	BTS-56K	Note 2
R104	5.1Ω	½	43X239		
R105	1 Meg	1	C85105		
R106	10KΩ	5	43X272	1 3/4A-10K	
R107	1500Ω	15	43X275	2D-1500	
R108	330Ω	10	43X273	1 3/4 A-350	
R109	270KΩ	½	B85274	BTS-270KΩ	

Note 1 Some models use a 12KΩ resistor in this application.
Note 2 Not used in all models
† Items R61A, R61B, C54A, C54B, C54C are combined in one unit.
● Items R75A, R75B, R75C, C59A, C59B, C59C are combinedin one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	117VAC ⓑ 1.82 A	600VCT .240ADC	5VAC ⓓ 3A	6.3VAC ⓔ 1.1A	53X324		P-3077 P-3074 ①		
				SEC. 4 6.3VAC 8.8A					

① Use for Secondary #3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T2	194Ω	110Ω	54X8	A-8125	A-3000 ①	TBO-2 ①	A-97X	Vert. Osc. Trans. Horiz. Output Trans.
T3	440Ω tap ⓐ 10, 8Ω	9Ω SEC. 2	53X326					
	15 Ω, 24Ω, 40Ω	0Ω						
T4	1600Ω Tap ⓐ 4.5Ω		51X156	A-8141	A-3039		A-104X	Vert. Output Trans.
T5A	18Ω		9A2256	DY-9A	MDF-70	TY-3	Y-17	Horiz. Deflection Coils
B	50Ω		9A2274 ②					Vert. Deflection Coils

1. Drill one new mtg. hole.
2. Alternate deflection yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T6	5.8KΩ	3.2Ω	495Ω	.9Ω	51X150A	A-3850	A-2981	RO-301	S-3X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	8"	PM	3.7Ω	C-12A477 12A504 ① 12A502 ②	ST-115 Mod. P8-V	8A21	① Alternate 6" PM Speaker ② Alternate 12" PM speaker

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
L1	.250A	51Ω	2.2 Hy.	52X90	C-2321 ①	C-2991 ①	TR-3300 ①	C-25A

① Drill one new mtg. hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	9A2278-1		Channel 2
L3	RF Choke	0Ω		31B-296		
L4	Fil. Choke	0Ω		34A-546		
L5	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-1		Channel 2
L6	Fil. Choke	0Ω		34A575		
L7	RF Choke	0Ω		31B-295		

TRUETONE MODELS 2D2333A, B

PARTS LIST AND DESCRIPTIONS (Continued)

(COILS RF-IF) CONT.

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	TRUETONE PART No.	MILLER PART No.	MEISSNER PART No.	
L8	1st. Video IF	1.1Ω		31A-076	6171	19-1020	
L9	RF Choke	1.2Ω		31B-239			
L10	Fil. Choke	0Ω		9A2033			
L11	2nd. Video IF	.3Ω	.3Ω	9A2230		17-1063	
L12	Fil. Choke	0Ω		9A2033		17-1063	
L13	3rd. Video IF	.3Ω	.3Ω	9A2230		17-1062	
L14	Fil. Choke	0Ω		9A2033			
L15	RF Choke	2.5Ω		9A1979	6176	19-3036	36 Microheneries
L16	4th. Video IF	.1Ω		9A2226	6187		Includes Trap
L17	Series Peaking Coil	7.5Ω		36A10	6172*	19-3075*	60Microheneries wound on 22KΩ resistor.
L18	Shunt Peaking Coil	24Ω		36A11	6174	19-1923	500 Microheneries
L19	4.5MC Trap	.3Ω		9A2074	1470	20-1004	
L20	Series Peaking Coil	2.5Ω		9A1979	6176	19-3036	36 Microheneries
L21	Shunt Peaking Coil	7.5Ω		36A10	6172■	19-3075■	60Microheneries wound on 1.5KΩ resistor.
L22	Series Peaking Coil	12.5Ω		36A12	4644†	19-3160†	160Microheneries wound on 22KΩ resistor.
L23	Shunt Peaking Coil	14Ω		36A2	6180	19-3180	190 Microheneries
L24	1st. Sound IF	2.8Ω		9A2168	1470A▲		
L25	2nd. Sound IF	1.7Ω	1.7Ω	9A2170	6203	17-1021**	
L26	Ratio Det.	3.4Ω	.7CT	9A2269	1468	17-1033	Tertiary winding .15Ω
L27	Horiz. Osc.	48Ω		9A2096	6210	19-1576	
L28	Width Coil	.6Ω		9A2183			
L29	Horiz. Lin.	16Ω		9A2262			

** Drill mounting holes.
* Parallel with 22KΩ resistor.
■ Parallel with 1.5KΩ resistor.
† Parallel with 22KΩ resistor.
▲ Add 39MMF cap externally.

FUSES

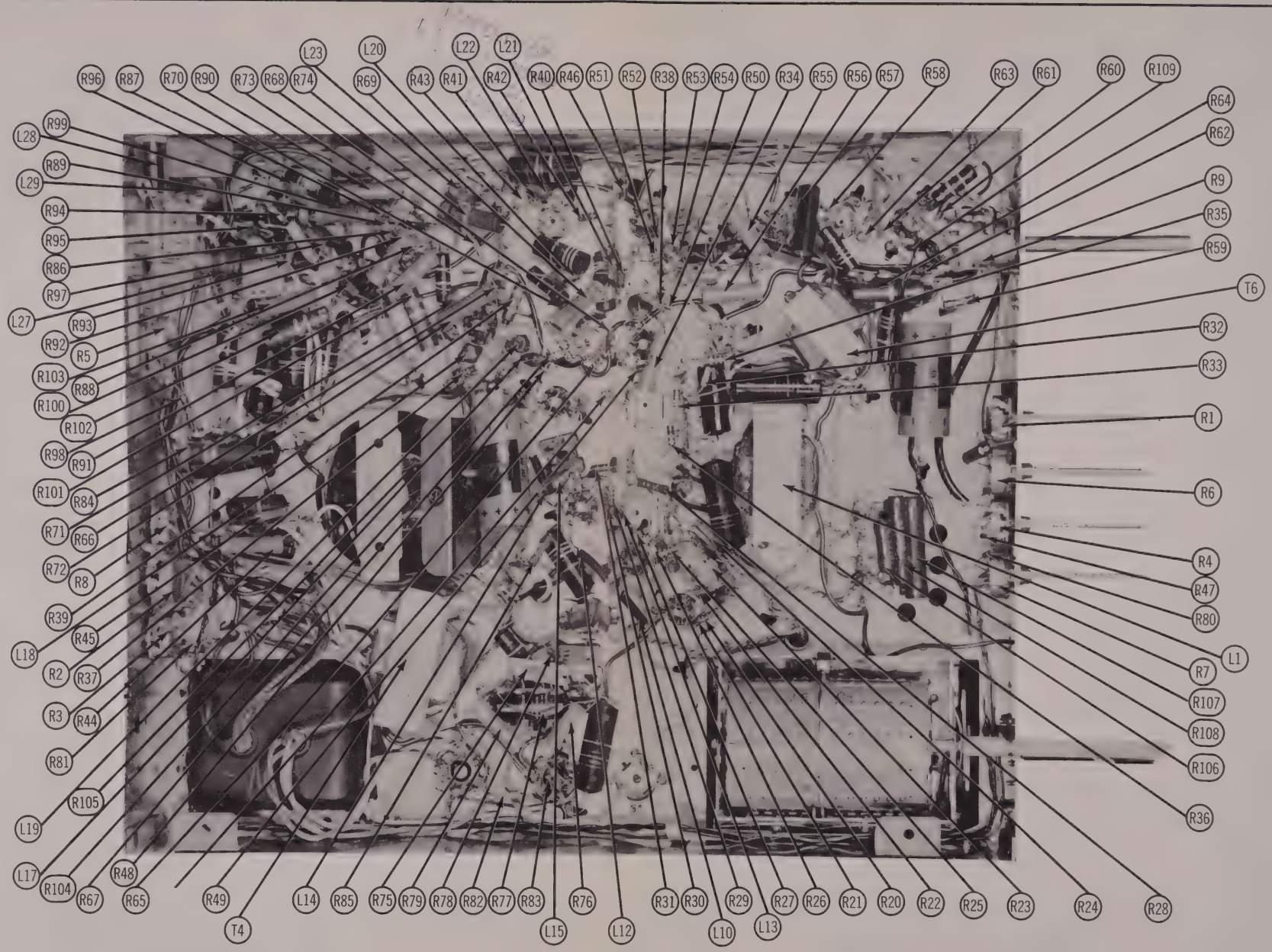
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG-Slo-Blo	4/10 A. 125V	16X147-3	16X146	313.400	357001	MDL-4/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					TRUETONE PART No.		
M2	Bayonet	7.5	.2	white	7A32		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	RF Tuner	25A1095	
M4	Centering Magnet	2A426	
M5	Ion Trap	2A407	
	Ant. Coils	9A2278-2	Channel #3
	Ant. Coils	9A2278-3	Channel #4
	Ant. Coils	9A2278-4	Channel #5
	Ant. Coils	9A2278-5	Channel #6
	Ant. Coils	9A2278-6	Channel #7
	Ant. Coils	9A2278-7	Channel #8
	Ant. Coils	9A2278-8	Channel #9
	Ant. Coils	9A2278-9	Channel #10
	Ant. Coils	9A2278-10	Channel #11
	Ant. Coils	9A2278-11	Channel #12
	Ant. Coils	9A2278-12	Channel #13
	RF, Mixer Grid & Osc. Coil	9A2279-2	Channel #3
	RF, Mixer Grid & Osc. Coil	9A2279-3	Channel #4
	RF, Mixer Grid & Osc. Coil	9A2279-4	Channel #5
	RF, Mixer Grid & Osc. Coils	9A2279-5	Channel #6
	RF, Mixer Grid & Osc. Coil	9A2279-6	Channel #7
	RF, Mixer Grid & Osc. Coil	9A2279-7	Channel #8
	RF, Mixer Grid & Osc. Coil	9A2279-8	Channel #9
	RF, Mixer Grid & Osc. Coil	9A2279-9	Channel #10
	RF, Mixer Grid & Osc. Coil	9A2279-10	Channel #11
	RF, Mixer Grid & Osc. Coil	9A2279-11	Channel #12
	RF, Mixer Grid & Osc. Coil	9A2279-12	Channel #13
	Knob	10A779	Off/On Volume
	Knob	10A812-1	Channel Selector
	Knob	10A821-1	Contrast
	Knob	10A-820-1	Fine Tuning



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLA...
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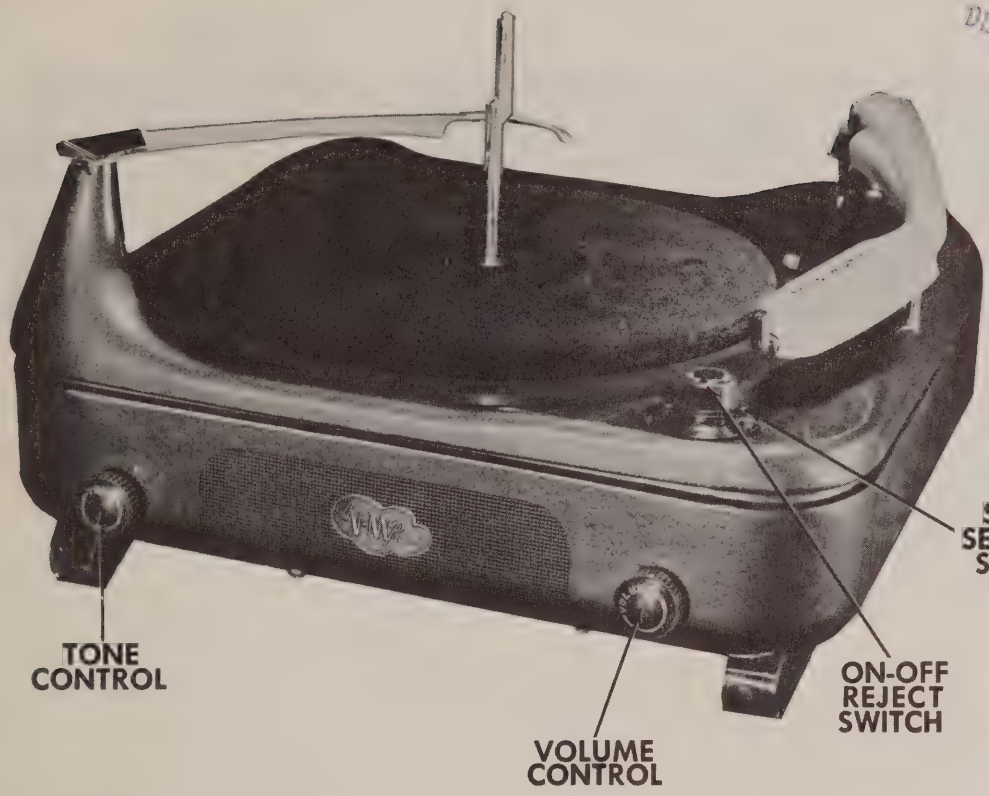
DEN...



V-M
MODEL 972

TRADE NAME	V-M Model 972
MANUFACTURER	V-M Corp., Benton Harbor, Michigan
TYPE SET	AC Operated Audio Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12SQ7 AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .22 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT V-M MODEL 950, SEE PHOTOFACT FOLDER 13, SET 107 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		V-M PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12SQ7	12SQ7	8Q	
V2	Audio Output	50L6GT	50L6GT	7S	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	60	150		PRS150/50-30-20		BBRT5315C			TVA-3430	Red
B	20	150								Green
C	20	50								Yellow
C2	.003	400		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C3	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C4	.003	600		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C5	.08	400								

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	11946	Q13-139	AG-66-Z	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	500KΩ	½	11943	Q13-133	AG-60-Z	BSK-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

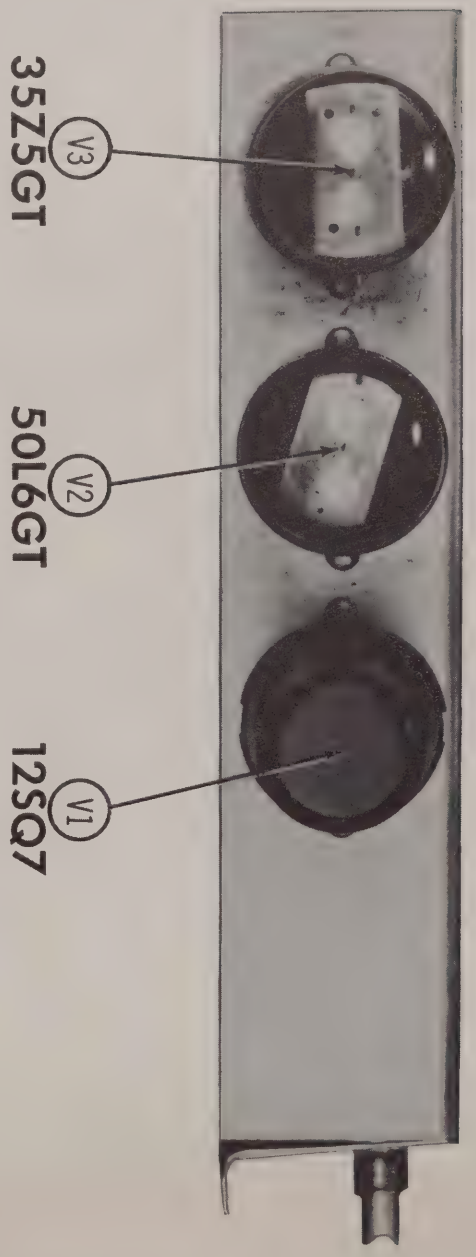
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R3	33KΩ	½		BTS-33K	
R4	220KΩ	½		BTS-220K	
R5	4.7Meg	½		BTS-4.7Meg	
R6	220KΩ	½		BTS-220K	
R7	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R8	150Ω	½		BTS-150	
R9	4700Ω	½		BTS-4700	
R10	33Ω	½			
R11	150Ω	10		1 3/4A-150	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		V-M PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	1.9KΩ	3.3Ω	115Ω	.6Ω	Part of Spkr.	A-3876 ①	A-2928 ①	RO-2 ①	S-2X ①	① Bend mounting tabs down, file out slot, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	VIKING PART No.	QUAM PART No.	
SP1	4 x 6"	PM	3.3Ω	3615	46J6	46A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	V-M PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-J	A-1 A-3	W22AB	A62A A65MG	96-T	0-1 or S-1 & 0-3 or S-3	

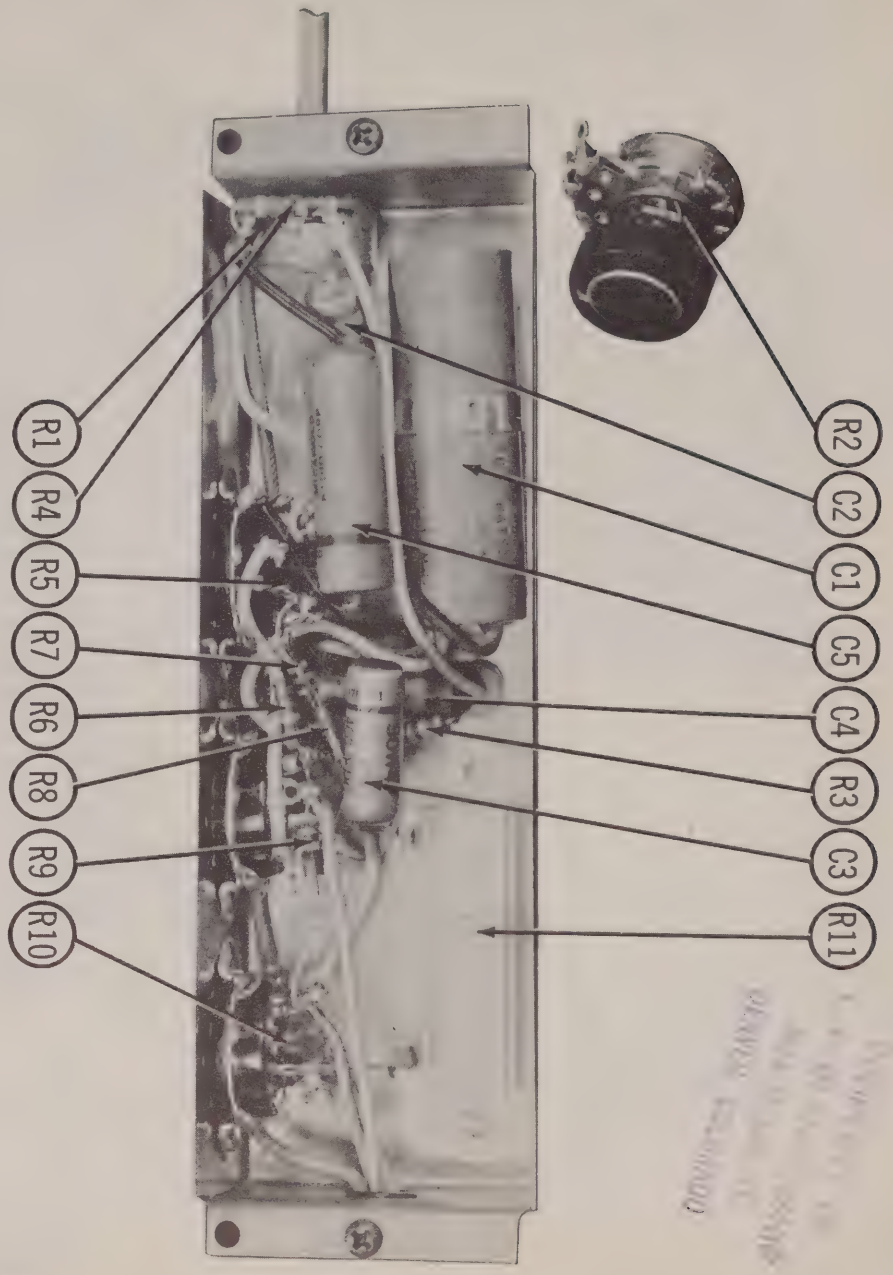
ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THEIR RESPECTIVE CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

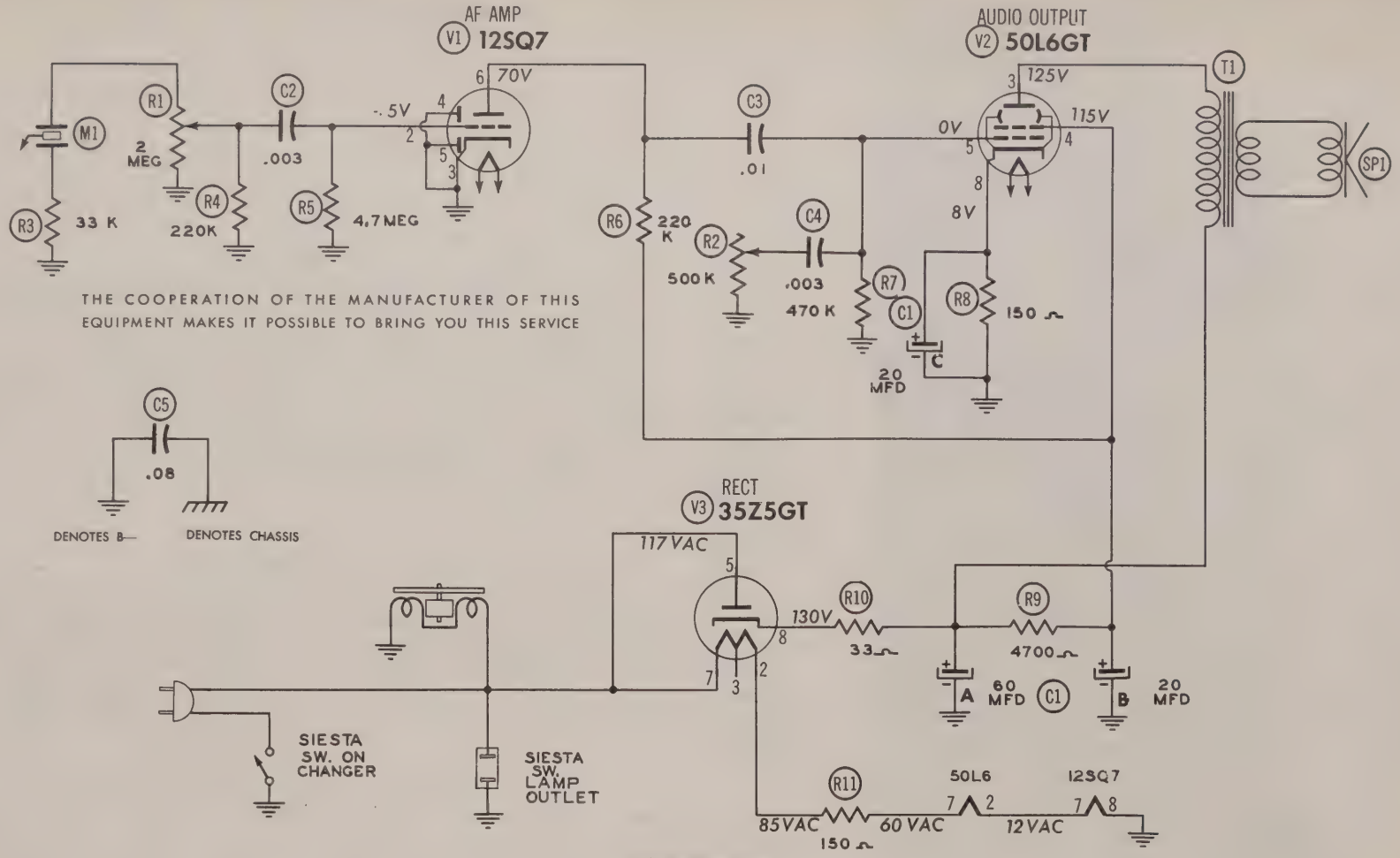
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	V-M PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-30A and W-30MGS	JP-30 and JPS-30LP	

CHASSIS—BOTTOM VIEW





THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7	INF	4.7Meg	0Ω	0Ω	0Ω	†220KΩ	12Ω	0Ω
V 2	50L6GT	INF	12Ω	†148Ω	†4.7KΩ	470KΩ	INF	48Ω	150Ω
V 3	35Z5GT	INF	45Ω	39Ω	†33Ω	18Ω	18Ω	18Ω	600KΩ

ALL MEASUREMENTS TAKEN WITH PHONO MOTOR CONNECTED
† MEASURED FROM PIN 8 OF V3.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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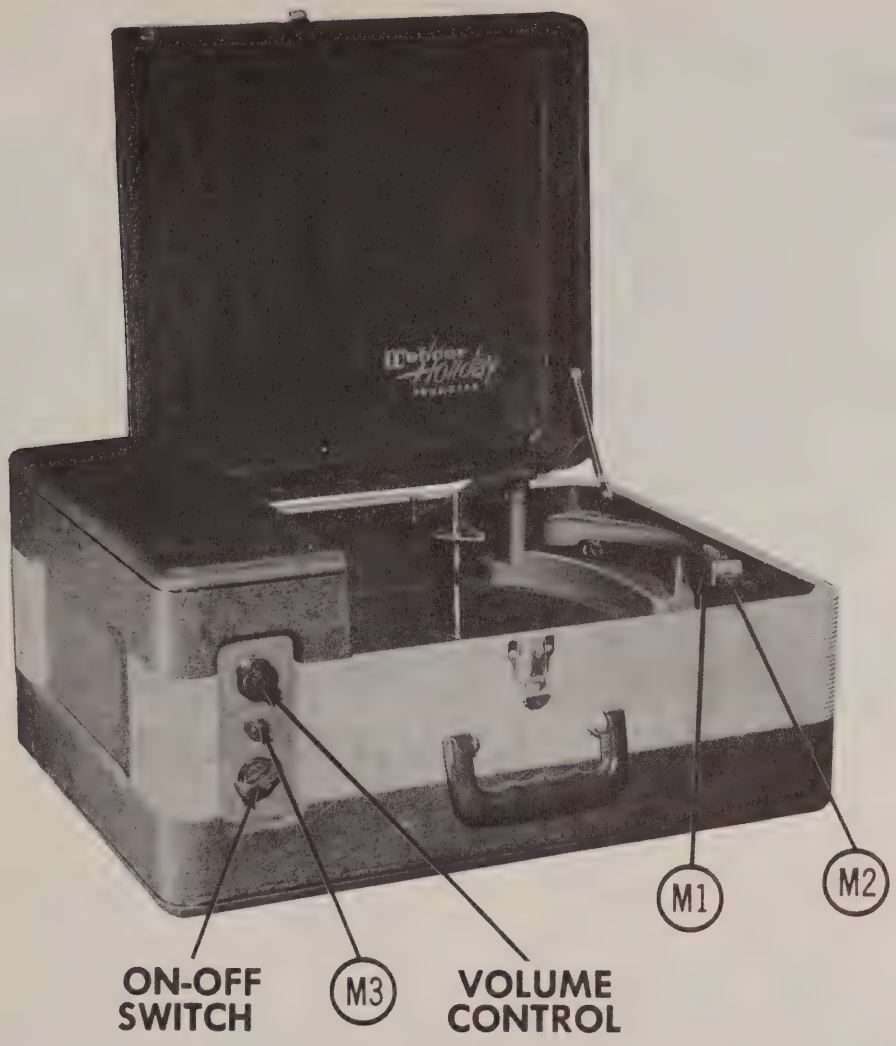
203-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

WEBCOR
MODEL B-124-1



WEBCOR
MODEL B-124-1

TRADE NAME	Webcor Model B-124-1
MANUFACTURER	Webster-Chicago, 5610 Bloomingdale Ave., Chicago 39, Illinois.
TYPE SET	AC Operated Audio Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12SQ7 or 12SJ7 AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .22 Amp. @ 117 Volts AC

RECORD CHANGER UNIT - WEBSTER-CHICAGO MODEL 114

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		WEBCOR PART No.	STANDARD REPLACEMENT		
V1A	AF Amplifier	12SQ7	12SQ7	8Q	
B	AF Amplifier	12SJ7	12SJ7	8N	
V2	Audio Output	50L6GT	50L6GT	7S	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	WEBCOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/50-		EDL44215		3N532	TVA-3448	Red
B	40	150		30-20						Red
C	20	150								Blue
C2	10	25		PRS25/10		BR102A		TC22	TVA-1204	
C3	10	25		PRS25/10		BR102A		TC22	TVA-1204	Note 1
C4	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C5	100			S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Note 2
C6	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT4l1	4TM-S1	Note 3
C7	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	Note 1
C8	.015	400		P488-015		PTE6S15		TP400	6TM-S15	
C9	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-202	PT6222	6TM-D22	Note 4
C10	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT4l1	4TM-S1	Note 5
C11	.047	400		489ZX-05		PJ4147		PT4147	4TM-S47	

Note 1. Used only with ceramic cartridge and 12SJ7 AF Amp.
Note 2. Not used in all Models.
Note 3. Not used with ceramic cartridge and 12SJ7 AF Amp.
Other input circuits may use .015MFD in this application.
Note 4. Models with crystal cartridge use .05MFD in this application.
Note 5. Some Models use .002MFD in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	WEBCOR PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	31P060	Q13-133	AG-60-Z	BSK-60-S	U-48	Tone-Note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	1 Meg	½	31P059	Q13-137	AG-63-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

Note . Models using a ceramic cartridge use a 1 Meg control in this application.

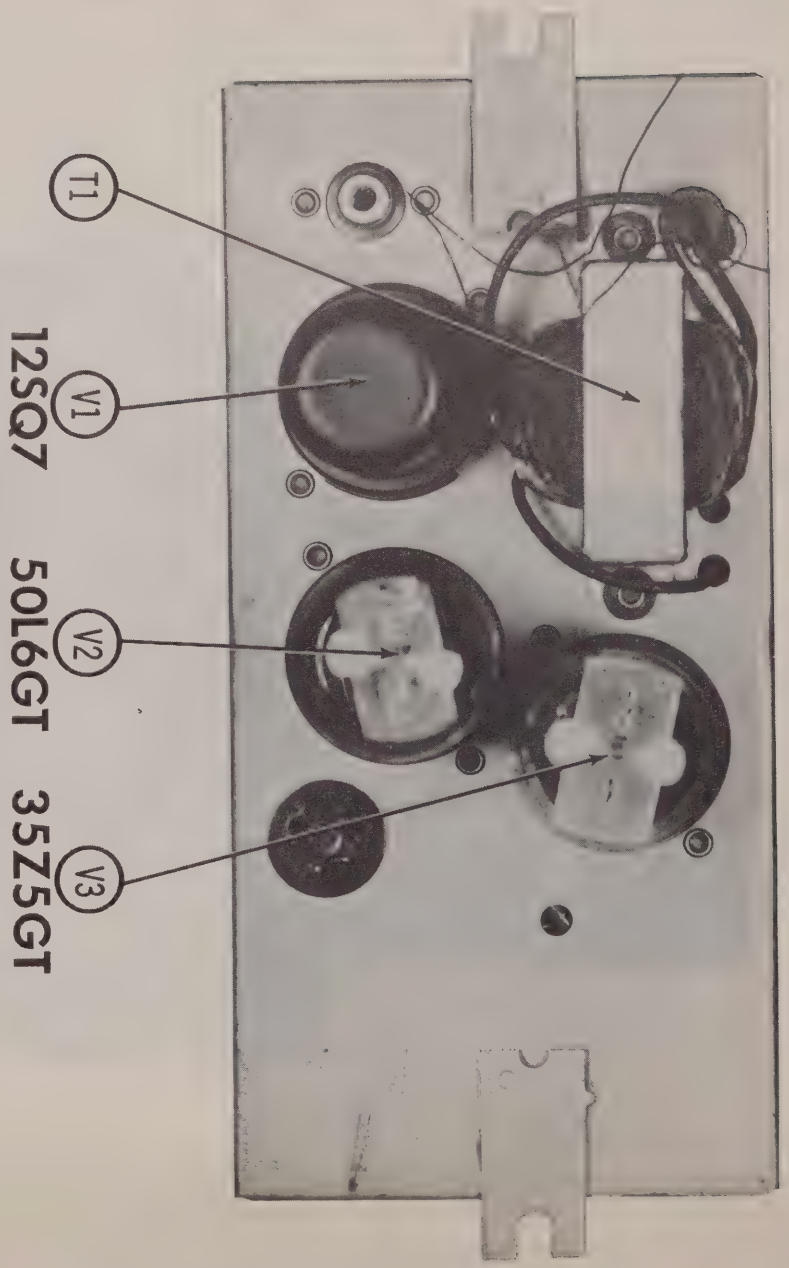
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	WEBCOR PART No.	IRC PART No.	
R3	270KΩ	½		BTS-270K	Note 1
R4	4.7Meg	½		BTS-4.7Meg	Note 2
R5	470KΩ	½		BTS-470K	Note 3
R6	470KΩ	1		BTS-470K	Note 1
R7	150Ω	½		BTS-150	
R8	220Ω	½		BTS-220	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	WEBCOR PART No.	IRC PART No.	
R9	3900Ω	½		BTS-3900	Note 4
R10	27Ω	½			
R11	135Ω	5			
R12	2700Ω	½		BTS-2700	Note 5
R13	1 Meg	½		BTS-1 Meg	Note 5

Note 1. Not used in all models.
Note 2. Not used with ceramic cartridge & 12SJ7 AF Amp.
Note 3. Models with crystal cartridge & 12SJ7 AF Amp use a 68KΩ resistor.
Models with ceramic cartridge & 12SJ AF Amp use a 150KΩ resistor.
Note 4. Some models may use a 4700Ω resistor in this application.
Note 5. Used only in models with ceramic cartridge & 12SJ7 AF Amp.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		WEBCOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.16KΩ	3.2Ω	162Ω	.71Ω SEC. 2 12.8Ω	67P018					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.2Ω	76P011	ST-105 Mod. P5-X	5A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	WEBCOR PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-C-J	A-1 A-3	WC24	A53MG A52A	46-0T	0-1 0-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

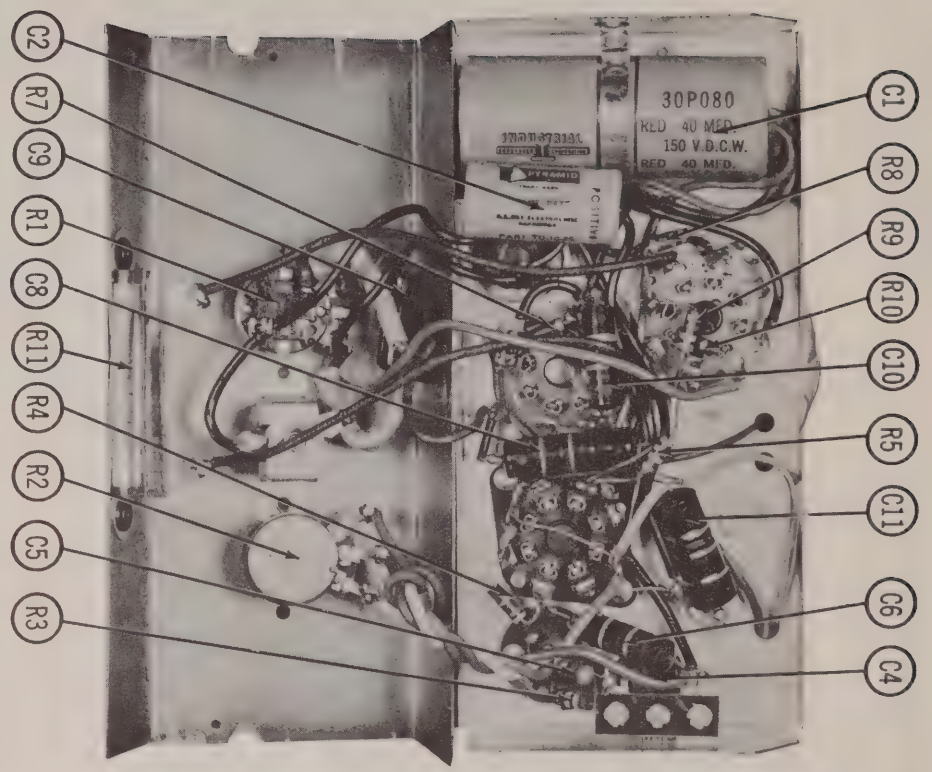
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

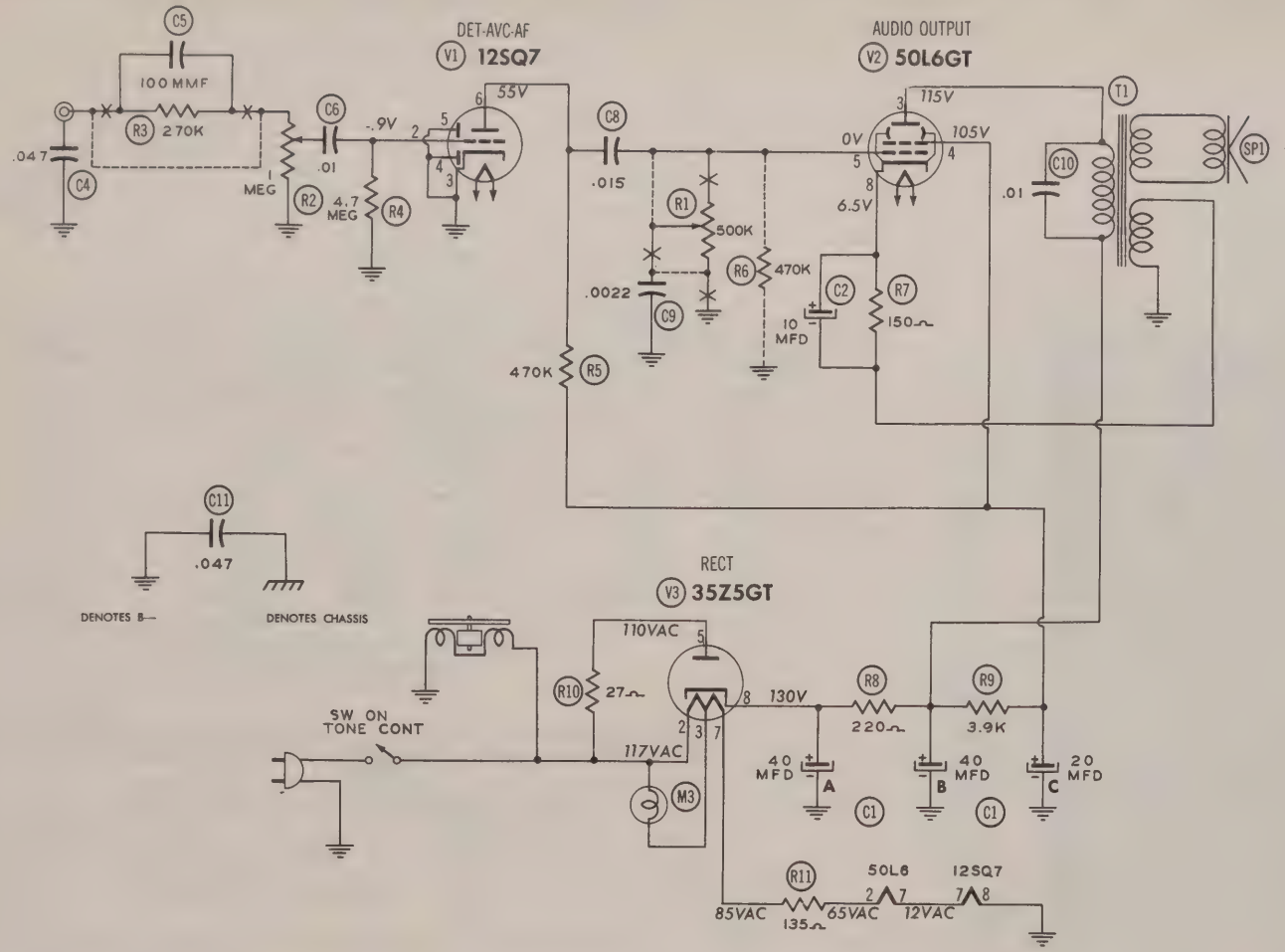
ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-5MGA or W-5MGS and W-5A or W-5S	A-75LP or A-85LP and A-75 or A-85	

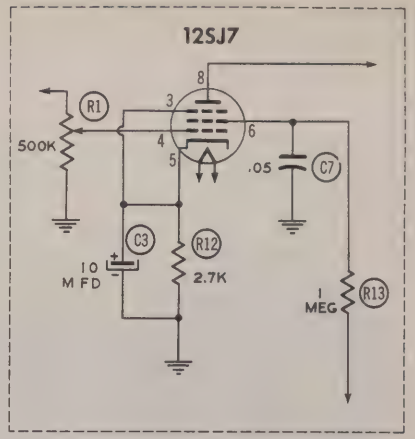
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					WEBCOR PART No.		
M3	Bayonet	6-8	.15	Brown			Type #47

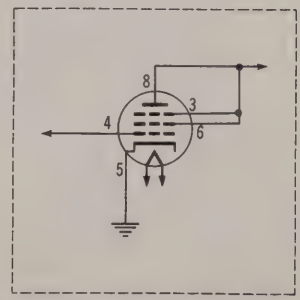
CHASSIS—BOTTOM VIEW







AF AMP CIRCUIT USED WHEN CERAMIC CARTRIDGE IS USED



AF AMP CIRCUIT USED WHEN CRYSTAL CARTRIDGE IS USED

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7	0Ω	4.7Meg	0Ω	0Ω	0Ω	†470KΩ	12Ω	0Ω
V 2	50L6	INF	55Ω	†220Ω	†4KΩ	470KΩ	12Ω	12Ω	150Ω
V 3	35Z5	INF	200Ω	220Ω	INF	220Ω	INF	190Ω	600KΩ

† MEASURED FROM PIN 8 OF V3.

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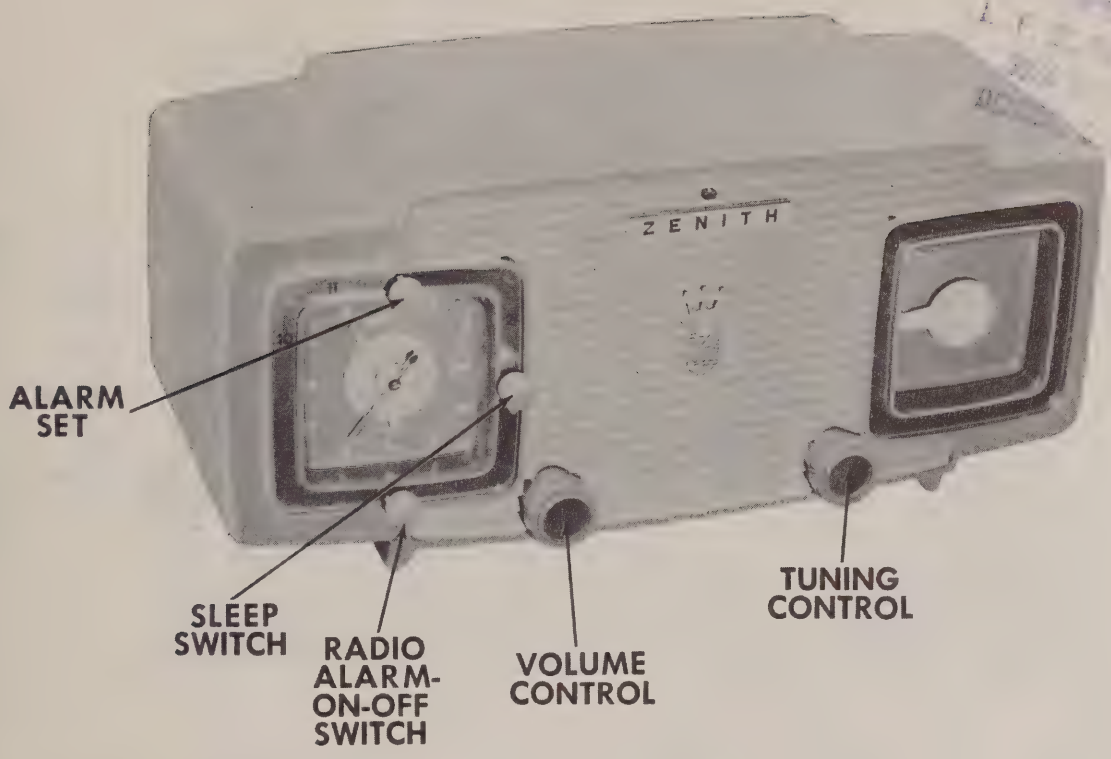
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

203-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% on voltage and resistance readings.
6. All controls at minimum, proper output load connected.

ZENITH
MODELS K622, F, G, W (Ch. 6K03)

ZENITH
MODELS K622, F, G, W (Ch. 6K03)



ZENITH
MODELS K622, F, G, W (Ch. 6K03)

TRADE NAME	Zenith Models K622, F, G, W (Ch. 6K03)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Six)	Types 6BJ6 RF Amp., 12BE6 Conv., 6BJ6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn tuning gang fully closed and set pointer parallel with chassis base at left hand side of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400%Mod)	Quiet point near 600KC	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL K622 (Ch. 6K03)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	6BJ6	6BJ6	7CM	
V4	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V5	Audio Output	50C5	50C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTE
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■80	150	22-2351	AFH2-19		BO18		FP216	TVL-3440	
B	▲40	150								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C4	4000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	UC-5240	5HK-D4	
C5A	.01									
B	250		♦105-27		♦PC-80		♦1404-01		♦102C1	
C										
C6	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C8	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

♦ Items C5A, C5B, C5C, R10A, R10B are combined in one unit.
When replacing items separately C5B and C5C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	63-2826	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	63-2830	Q13-133	AG-60-Z	B-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R3	330Ω	½	63-1765	BTS-330	
R4	15KΩ	½	63-1835	BTS-15K	
R5	1000Ω	1	63-1786		
R6	22KΩ	½	63-1842	BTS-22K	
R7	68Ω	½	63-1737		
R8	2.2Meg	½	63-1926	BTS-2.2Meg	
R9	4.7Meg	½	63-1940	BTS-4.7Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R10A	500KΩ	½	♦105-27		
B	500KΩ	½			
R11	150Ω	1	63-1977	BTA-150	
R12	1000Ω	1	63-965	BTA-1000	
R13	22Ω	1	63-1450		
R14	*	*	63-2797		Note

♦ Items R10A, R10B, C5A, C5B, C5C are combined in one unit.
* Special Resistor - 100Ω Hot, 800Ω cold
Note: Not used in all Models.

TRANSFORMER (AUDIO OUTPUT)

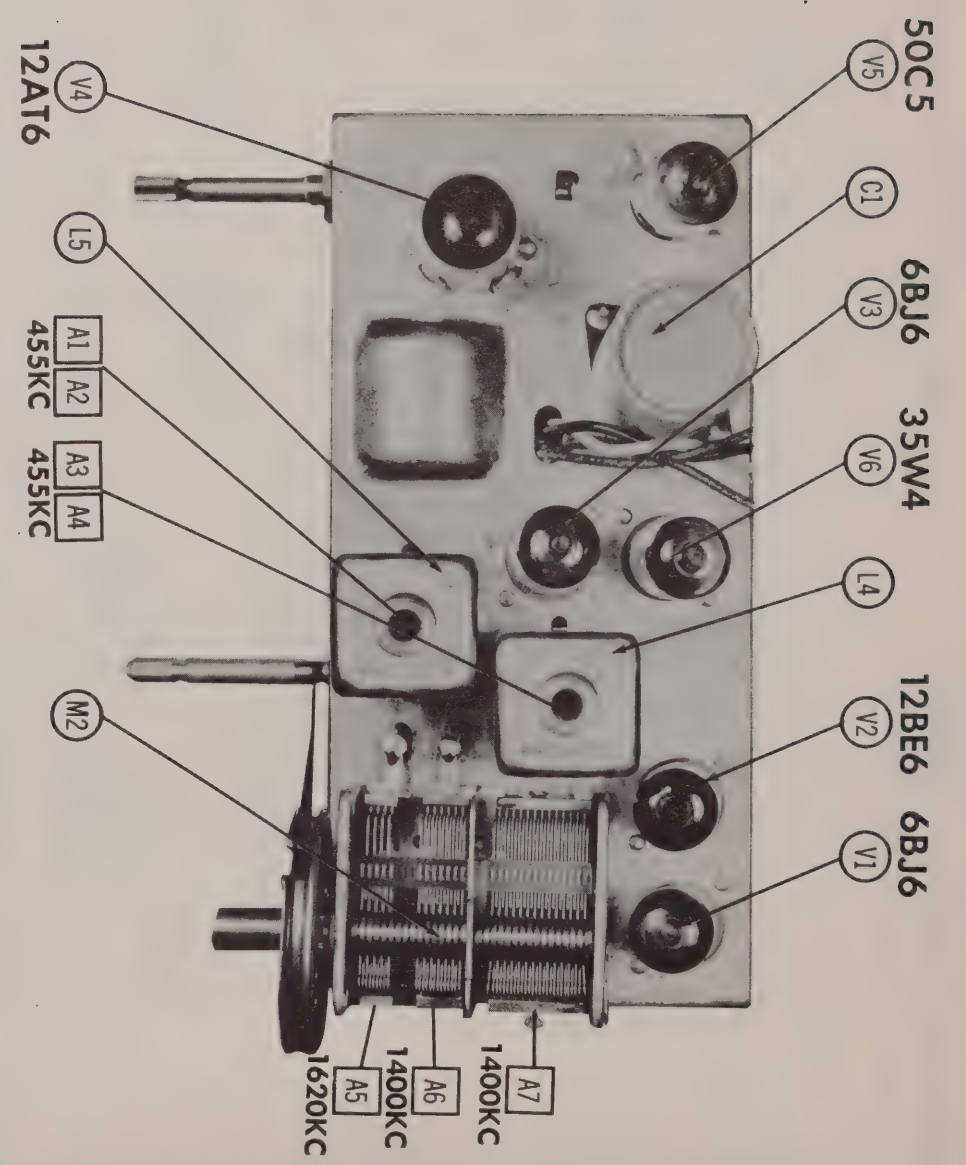
ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3.3Ω	193Ω tap @ 6Ω	.64Ω	95-1293	A-3849 ①	A-3031①	RO-3 ①		

① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	49-713	ST-113 Mod. P4-X	4A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	Loop Ant.	2.6Ω		S-19532		
L2	RF Coil	3Ω	10Ω	S-18500		Sec. tapped @ 5.8Ω
L3	Osc. Coil	.7Ω	9Ω	S-18501		
L4	Input IF	15.5Ω	15Ω	95-1101	012-C1	
L5	Output IF	16Ω	16Ω	95-1102	12-C6 *	

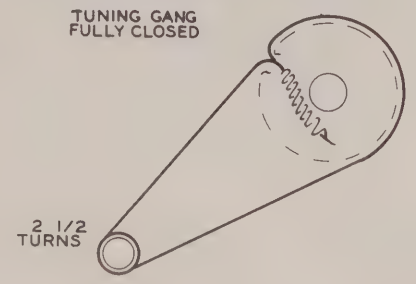
* Use adaptor plate.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	100-67		Type No. 47.

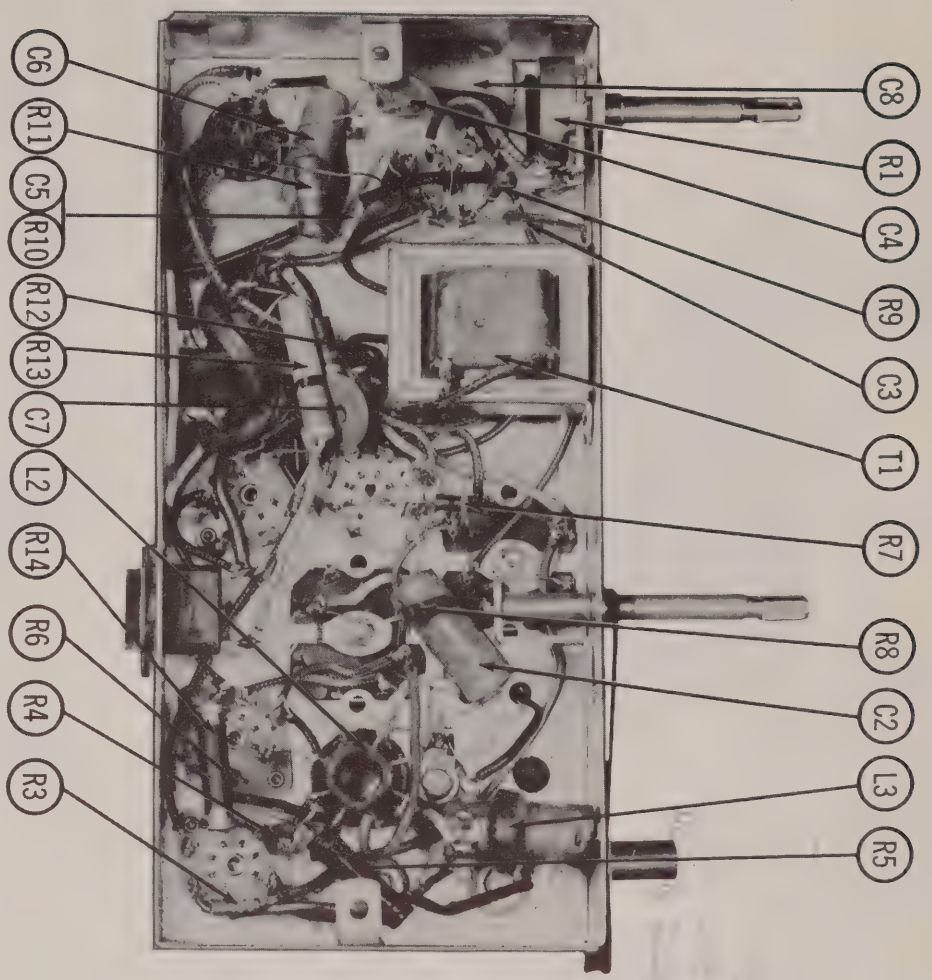
MISCELLANEOUS

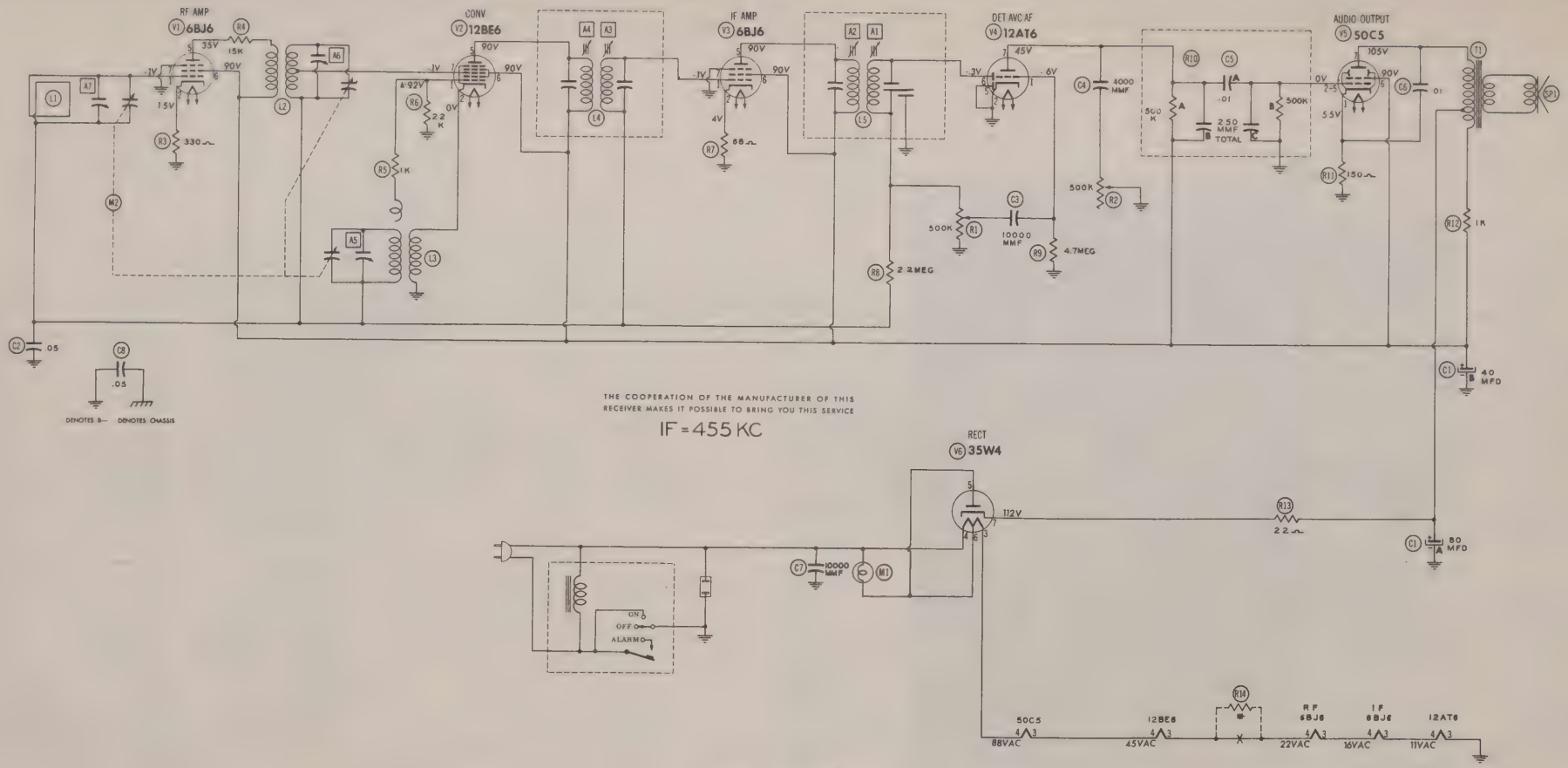
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Tuning Capacitor	22-2352	35-477MMF, 17-232MMF, 14-152MMF.
	Clock Assembly	S-19226	Model K622.
	Clock Assembly	S-19227	Model K622F.
	Clock Assembly	S-19224	Model K622G.
	Clock Assembly	S-19225	Model K622W.
	Dial (Clock)	26-481	
	Cabinet	14-1476	Model K622.
	Cabinet	14-1477	Model K622F.
	Cabinet	14-1474	Model K622G.
	Cabinet	14-1475	Model K622W.
	Back	2-307	Model K622.
	Back	2-317	Model K622F.
	Back	2-310	Model K622G.
	Back	2-309	Model K622W.
	Scale	26-480	
	Glass	192-155	(2 Used).
	Pointer	59-282	Model K622.
	Pointer	59-280	Model K622F, K622G.
	Knob	59-281	Model K622W.
	Knob	46-943	Tuning, Volume, Model K622 (2 Used).
	Knob	46-950	Tuning, Volume, Model K622F (2 Used)l
	Knob	46-1025	Tuning, Volume, Model K622G (2 Used).
	Knob	46-942	Tuning, Volume, Model K622W (2 Used).
	Knob	46-1077	Tone, Model K622.
	Knob	46-1078	Tone, Model K622F.
	Knob	46-1075	Tone, Model K622G.
	Knob	46-1076	Tone, Model K622W.
	Knob	46-904	Clock, Model K622 (3 Used).
	Knob	46-951	Clock, Model K622F (3 Used).
	Knob	46-985	Clock, Model K622G (3 Used).
	Knob	46-940	Clock, Model K622W (3 Used).



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	2.7Meg	330Ω	20Ω	27Ω	†16KΩ	†1KΩ	0Ω
V 2	12BE6	22KΩ	.5Ω	770Ω	780Ω	†1KΩ	†1KΩ	2.7Meg
V 3	6BJ6	2.7Meg	68Ω	13Ω	20Ω	†1KΩ	†1KΩ	0Ω
V 4	12AT6	4.7Meg	0Ω	0Ω	13Ω	0Ω	500KΩ	†470KΩ
V 5	50C5	150Ω	470KΩ	780Ω	830Ω	470KΩ	†1KΩ	†215Ω
V 6	35W4	†1KΩ	INF	830Ω	860Ω	855Ω	855Ω	400KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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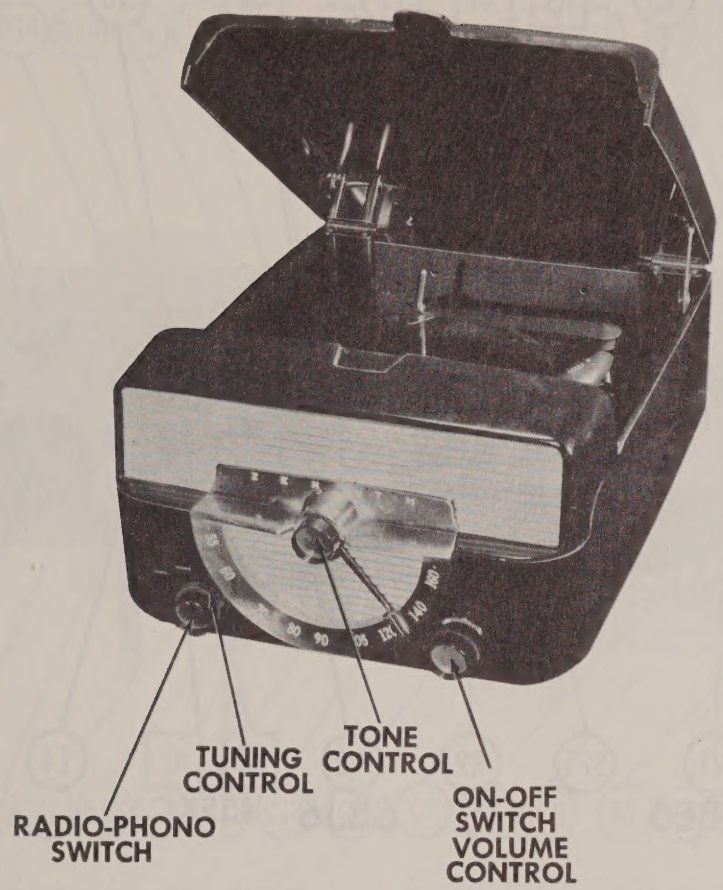
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ZENITH
MODEL K666R (Ch. 6K02)

ZENITH
MODEL K666R (Ch. 6K02)



ZENITH
MODEL K666R (Ch. 6K02)

TRADE NAME	Zenith Model K666R (Ch. 6K02)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicage, Illinois
TYPE SET	AC Operated Radio-Phono Combination AM Superheterodyne Receiver
TUBES (Six)	Types 12BE6 Conv., 6BJ6 IF Amp., 6AQ6 (or) 12AT6 Det-AVC-AF Amp., 12J5 Phono Osc., 50C5 Audio Output, 35W4 (or) 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, is available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates tof antenna section of tuning gang. Low side to B-.	455KC (400~Mod)	Quiet point near 600KC.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to..001MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver . Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A6	"

If receiver oscillates during phono operation adjust trimmer A7 until oscillation ceases.

After alignment replace receiver in cabinet , turn tuning gang fully closed and set pointer to last index mark at low frequency end of dial.

RECORD CHANGER UNIT- ZENITH MODEL S-14044

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL K666R (Ch. 6K02)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	6BJ6	6BJ6	7CM	
V3A	Det.-AVC-AF Amp.	6AQ6	6AQ6	7BT	
B	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Phono Oscillator	12J5	12J5	6Q	
V6A	Rectifier	35W4	35W4	5BQ	
B	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	22-2272	AFH3-13		CO12		FP216 TC45	R1040	
B	▲40	150								
C	20	150								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note
C3	110		22-5							
C4	.0005	600	22-854	P688-0005	D6-501	PTE6T5	GP2K-501	PT635	6TM-T5	
C5	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C6	100	500	22-2361	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C7	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	4000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	DC-524	5HK-D4	
C9	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C10	4000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	DC-524	5HK-D4	
C11	.05	200	22-178	P288-04	DF-503	PJ2S5		PT415	2TM-S5	
C12A	.01		♦105-27		♦PC-84					
B	250									
C										
C13	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C14	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C15	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

♦ Items C12A, C12B, C12C, R9A, R9B are combined in one unit.
When replacing items separately C12B and C12C should total 250MMF
Note: Some Models may use 100MMF in this application (Part #22-162).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2270	Q11-133	AG-58-S	AB-59	U-50	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	KB-1	US-26	Attach to R1A
R2A	500KΩ	½	63-2269	Q11-133	AG-58-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

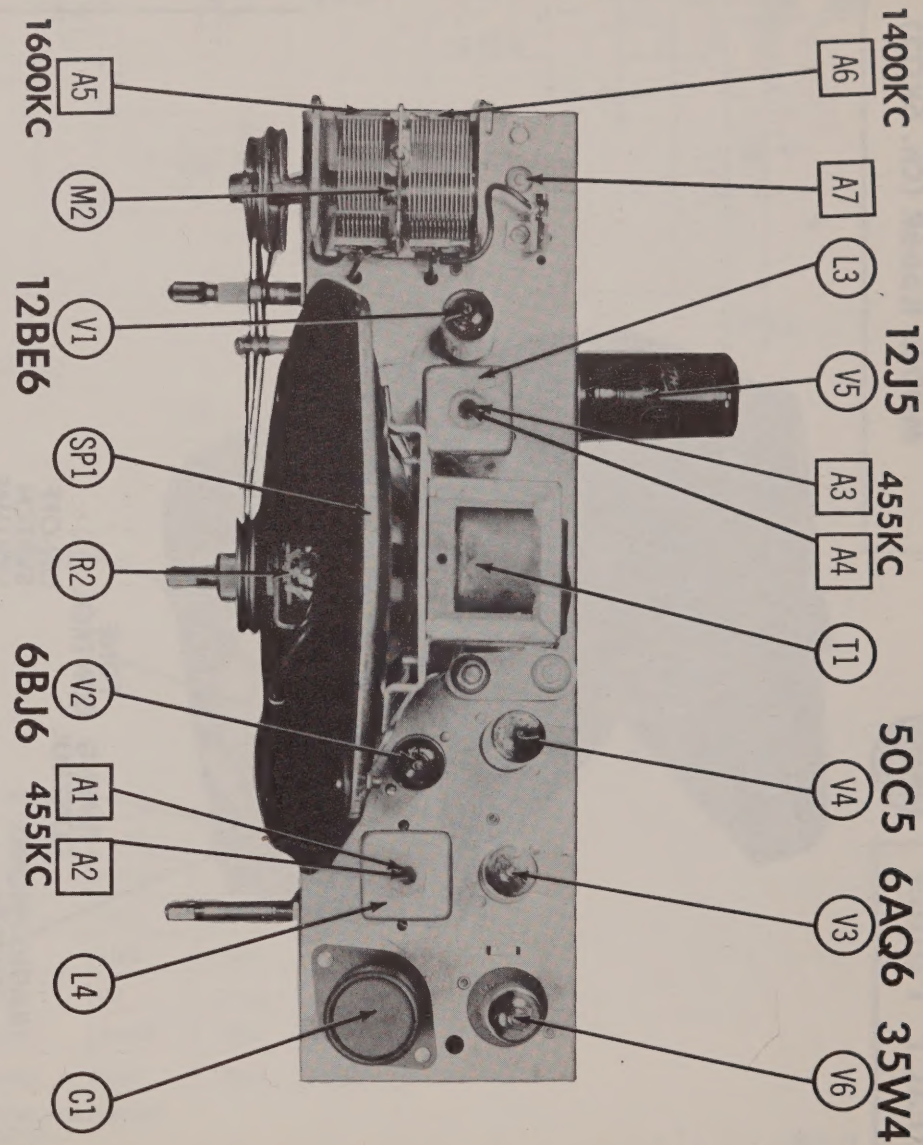
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R3	10KΩ	½	63-1828	BTS-10K	
R4	15Meg	½	63-1961	BTS-15Meg	
R5	2.2Meg	½	63-1926	BTS-2.2Meg	
R6	47KΩ	½	63-1856	BTS-47K	
R7	10KΩ	½	63-1828	BTS-10K	
R8	2.2Meg	½	63-1926	BTS-2.2Meg	
R9	4.7Meg	½	63-1940	BTS-4.7Meg	
R10A	500KΩ	½	♦ 105-27		
B	500KΩ	½			

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R11	3300Ω	½	63-1807	BTS-3300	
R12	150Ω	1	63-1977	BTA-150	
R13	1000Ω	1	63-1574	BTA-1000	
R14	22Ω	1	63-1450		
R15	2.2Meg	½	63-1926	BTS-2.2Meg	
R16	22KΩ	½	63-1842	BTS-22K	
R17	47KΩ	½	63-1856	BTS-47K	
R18	820Ω	½	63-1782	BTS-820	
R19	*	*	63-2797		Note

* Special resistor -100Ω Hot, 700Ω Cold.
Note . Used only when AF amp. is 6AQ6
♦ Items R9A, R9B, C12A, C12B, C12C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.5KΩ	5.7Ω	238Ω tap ⓐ 6.5Ω	.75Ω	206-725	A-3330	A-3031 ①	RO-3 ①		① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.7Ω	49-725	ST-115 Mod. P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	ZENITH PART No.	MILLER PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.8Ω		S-19169			
L2	Osc.Coil	.6Ω	5.8Ω	S-13799	71-Osc.*	14-1040*	
L3	Input IF	16Ω	15.5Ω	95-1101	012-C1	16-6666	
L4	Output IF	15.5Ω	16Ω	95-1102	12-C6†	16-6770†	
L5	Phono Osc. Coil	2Ω		S-12603			49 Microheneries

* Drill mounting hole
† Use adaptor plate.

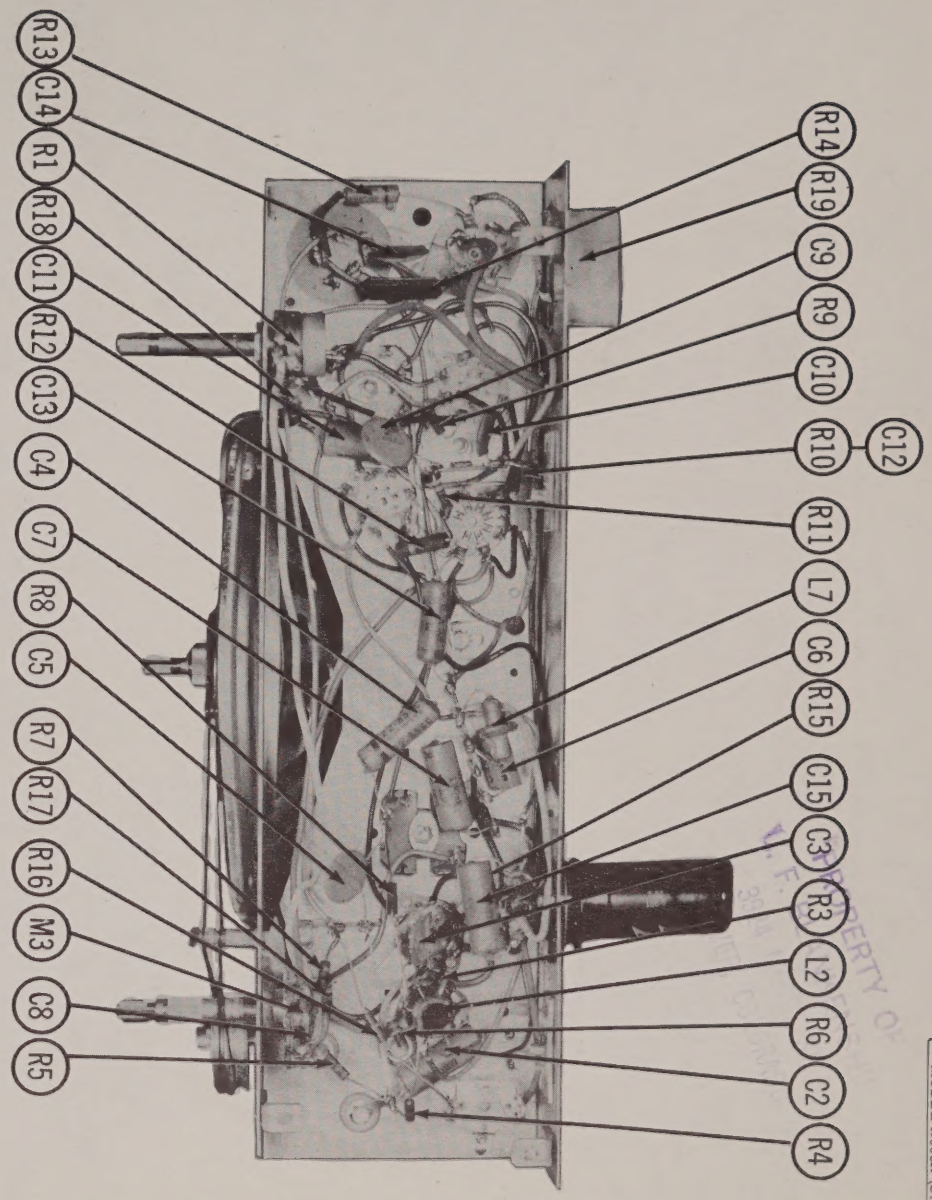
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	ZENITH PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	S-15780							

MISCELLANEOUS

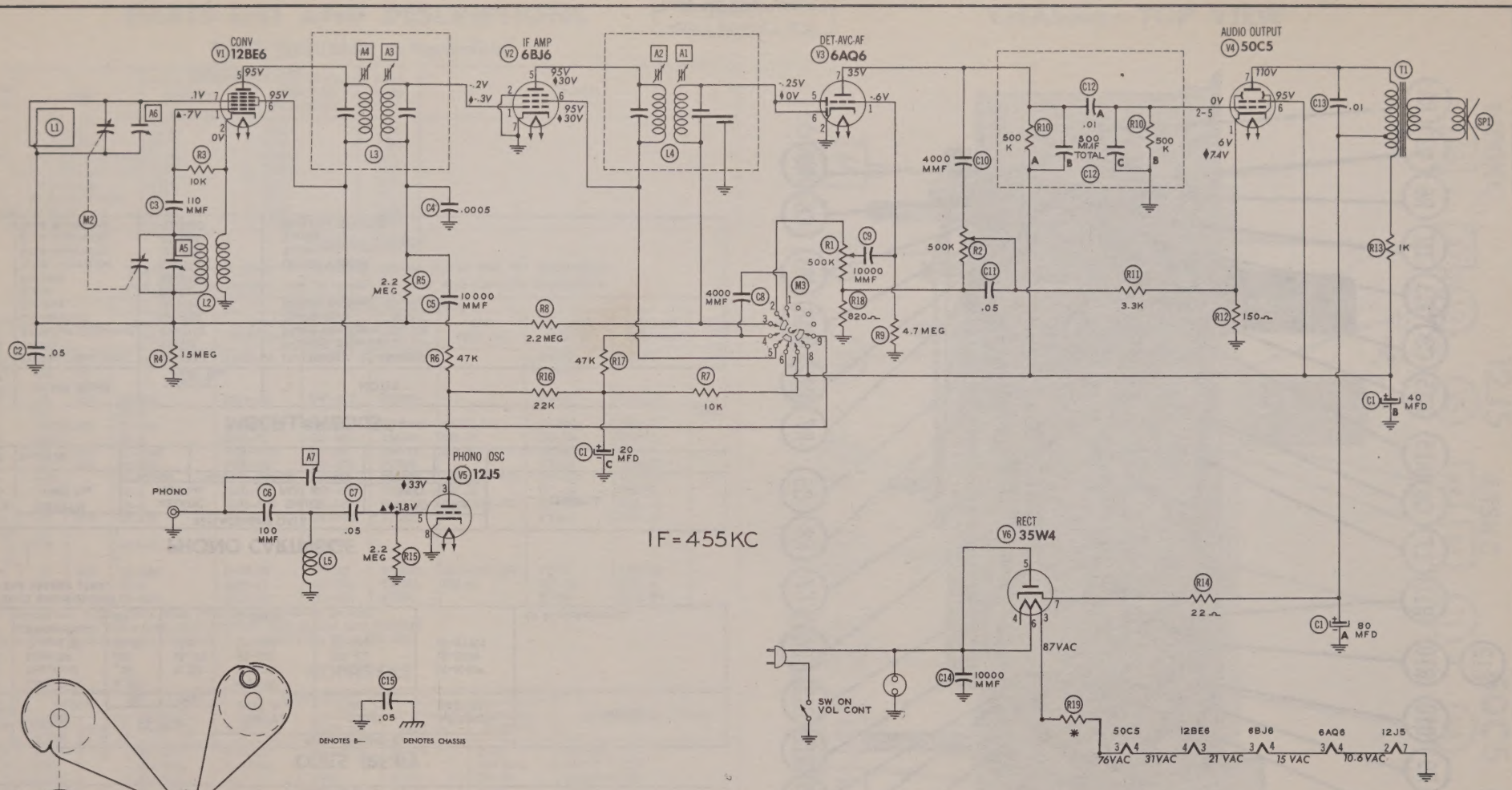
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Tuning Capacitor	22-2427	17-436MMF, 27-190MMF
M3	Switch	85-512	Function Selector
A7	Trimmer Capacitor	22-2242	Phono Oscillator
	Cabinet	14-1468	Top Section
	Cabinet	14-1469	Bottom Section
	Scale	26-477	
	Pointer	59-279	
	Knob Assembly	S-19174	Off/On Volume
	Knob Assembly	46-1019	Tone
	Knob Assembly	46-1105	Tuning
	Knob Assembly	46-1020	Function Selector

CHASSIS—BOTTOM VIEW



PROPERTY OF

ZENITH
MODEL K666R (Ch. 6K02)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	10KΩ	.6Ω	24Ω	36Ω	†1KΩ	†1KΩ	2.3Meg	
V 2	6BJ6	4.5Meg	0Ω	24Ω	18Ω	†1KΩ	†1KΩ	0Ω	
V 3	6AQ6	4.7Meg	0Ω	18Ω	12Ω	480KΩ	480KΩ	†470KΩ	
V 4	50C5	150Ω	470KΩ	90Ω	36Ω	470KΩ	†1KΩ	†258Ω	
V 5	12J5	INF	12Ω	†•33KΩ	INF	2.2Meg	INF	0Ω	0Ω
V 6	35W4	850Ω	128.5Ω	820Ω	850Ω	850Ω	850Ω	850KΩ	

† MEASURED FROM PIN 7 OF V6.
ALL MEASUREMENTS TAKEN IN "RADIO" POSITION UNLESS OTHERWISE SPECIFIED.
• MEASURED IN "PHONO" POSITION.
▲ MEASURED WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.